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EDITORIAL.

Professor Geo. C. Wittstein.

GEORGE CHRISTOPH WITTSTEIN was born on Jan. 25th, 1810, at Münden, in the former kingdom of Hanover, where his father was professor of mathematics at the gymnasium. He was educated at this institution until the completion of his fourteenth year, after which he was apprenticed to one of the apothecaries of his native city. At the expiration of his apprenticeship he acted for seven years as assistant in various pharmaceutical establishments, and passed his final state-examination at Hanover, receiving the highest mark for excellence. From there he went to Munich where he attended lectures, chiefly on natural history, for two years. During this time he solved a prize-problem,* and in the course of the second year was appointed "preparator" at the Pharmaceutical Institute of the University, presided over by Prof. Dr. F. A. Buchner, which position he retained for fifteen years. At the same time he superintended, during eleven years, the practical work in Buchner's private laboratory, and in 1840 he took his degree as Doctor Philosophiæ. In 1851 he accepted a call as Professor of Chemistry, Technology, and Natural History to the newly organized Agricultural and Technological Institute at Ansbach, but after two years returned again to Munich, where he established a Laboratory for instruction in theoretical and practical chemistry. This he conducted with great success for the long period of twenty-six years; and it is only two years ago that it passed into other hands. Since then he has devoted himself exclusively to literary works, the most important of which is a German translation of Pliny's Natural History, which he has had in preparation for a number of years, and for which he is peculiarly fitted in consequence of his intimate and extensive knowledge of natural history in all its branches, combined with a thorough classical training. It is to be expected that such a combination of knowledge will be able to shed light on many terms and passages heretofore dark and doubtful, contained in the writings of that author.*

Prof. Wittstein is at present also engaged in the composition of a Dictionary of Pharmacognosy of the Vegetable Kingdom which will appear in 1882.†

Prof. Wittstein began his literary career in 1836, with an essay published in Vol. LX. of Buchner's *Repertorium f. d. Pharmacie*, and from this time on, nearly every volume, up to the year 1851, contains one or more papers from his pen.‡ One of his most useful works is his well-known Guide to the Preparation and Examination of chemical and pharmaceutical Products.§ Another is his Guide to the Analysis of Plants and Plant-ashes,‖ a department which had previously been but little cultivated.

Wittstein's name will always stand prominent among the most uncompromising adversaries of the charlatans trafficking in nostrums and secret remedies, many of which he exposed by repeated

* On the behavior of insoluble oxides and salts to ammonia and ammoniacal salts.

* *Die Naturgeschichte des Cajus Plinius Secundus. Ins Deutsche übersetzt und mit Anmerkungen versehen von Prof. Dr. G. C. Wittstein in München.* 8vo, Leipzig, 1880. To be completed in ab. 12 parts (at $0.80), of which 4 have appeared.

† *Handwörterbuch der Pharmacognosie des Pflanzenreichs*, to form a part of the *Encyclopædie der Naturwissenschaften*, edited by Jaeger and others, and published at Breslau.

‡ Vols. LXX. is almost wholly, Vols. LXL., C., and CX. entirely written by him. In addition to this, he is the author of a complete Index of Authors and Subjects comprised in vols. I.–C. of this important journal.

§ *Anleitung zur Darstellung und Prüfung chemischer und pharmaceutischer Präparate.* 4th edit. 1866. Translated into several languages (*Practical pharmaceutical Chemistry.* London, 1853).

‖ *Anleitung zu chem. Analyse von Pflanzen und Pflanzentheilen auf ihre organische Bestandtheile.* Nördlingen 1868. (Also: *Anleitung zur chem. Analyse der Pflanzen-Asche*, ibid.) This work has been translated and published, with additions, by Prof. Ferdinand v. Mueller, of Melbourne (see NEW REM., 1879, p. 33).

analyses.* He belongs to that remarkable series of men who began their professional career as apprentices of pharmacy and who were gradually attracted, by a hunger for knowledge and love for science, to expand the sphere of their researches until they attained authoritative rank in the specialties to which they devoted themselves.†

The portrait published with this number is from a recent photograph.

Massachusetts College of Pharmaoy.

THIS College has made an important step in advance by elevating analytical chemistry, heretofore optional, to an obligatory branch of instruction, requisite for graduation hereafter. The establishment, in 1877, of a preliminary examination of those who proposed to enter the college, together with the graded course of instruction (junior and senior course), and the earnest personal attention and work of the friends of the college have placed this institution upon a firm basis, with bright prospects for the future.

During the session just closed, the junior class had a membership of 45, the senior class of 34, 15 of which passed their examination and received their diplomas as Graduates in Pharmacy.

A former President of the college has generously deposited with the school his very extensive and valuable library, to which he is constantly making important additions. This is one of the largest libraries upon subjects of interest to pharmacists in the United States, containing most of the standard works in *all* departments of pharmacy, among them *complete files of all* American and of the more important English, French and German pharmaceutical journals. The library is provided with a complete alphabetical card catalogue, arranged with each title, author and subject upon separate cards.

The membership of the College now reaches 80, and will doubtlessly soon considerably increase, as the advantages of affiliation with an educational institution established for the benefit of the pharmaceutical profession will be more fully recognized.

* The fourth edition of his *Taschenbuch der Geheimmittellehre* appeared at Nördlingen, in 1874.

† Of his other works the more important are the following:

1. *Autoren- und Sach-Register zu* 131 *Bänden* (1822–57) *des Archivs der Pharmacie* (publ. 1859).
2. Do., do., *zu* 116 *Bänden* (1832–60) *der Annalen der Chemie und Pharmacie* (publ. 1861).
3. Do., do., *zu dem Schweiggerschen Journal f. Chemie und Physik* (1811–1833) (publ. 1848).
4. *Vollständiges etymologisch-chemisches Handwörterbuch mit Berücksichtigung der Geschichte und Literatur d. Chemie.* 2 vols., München, 1847, und 3 supplem.
5. *Etymologisch-botanisches Handwörterbuch.* Ansbach, 1852.
6. *Grundriss der Chemie.* 2d ed., München, 1868.
7. He has also edited, from 1852 to 1873, the well-known and important *Vierteljahrschrift f. praktische Pharmacie.*

Prizes for Drug Examinations.

WE have a circular from Allaire, Woodward & Co., of Peoria, Ill., dated May 15th, in which they offer three prizes for essays relating to the actual average quality of the following-named powdered drugs, ordinarily obtainable in the American market: Rhubarb, ipecac, opium, cinchona bark, jalap, gamboge, socotrine aloes, ergot, and extract of licorice.

The circular states that the names of manufacturers and source of supply, if known, are not to be mentioned by the essayists, and that the object is to accumulate information which will be of general usefulness, and not for advertising purposes.

This is a subject which concerns every druggist and physician, and should receive very general attention. By addressing A. W. & Co., the conditions of the competition may be obtained.

New York State Pharmaceutical Association.

THIS association appears to have had a successful meeting in Buffalo, on the 19th inst. and following days, to judge by the fragments of news that arrive just as we are going to press. Upwards of sixty members were in attendance at the opening, and addresses of welcome were made by Alderman Beebe, Prof. J. C. White, M.D., and Mr. Julius Riefenstahl. President Bedford, in his address, submitted propositions for the amendment of the constitution in various particulars, the amendment of the by-laws empowering delegates to fill vacanies in their own delegations, the invitation of delegates to the privileges of the floor, the appointment or election of delegates to State Pharmaceutical Associations, the publication of the act of incorporation, revision of the "United States Pharmacopœia," the "Am. Pharmaceutical Association," the Internation Pharmaceutical Congress at London, honorary members, life-membership funds, deceased members, the Pharmacy bill, the present status of the Association, etc.

A large nunber of new members was admitted, and the minutes of the meeting held last year, in which there were a number of alleged errors, were formally approved.

The Association, by a formal vote, indorsed the Pharmacy Act now before the Legislature, and deprecated the changes to which it is proposed to subject it in the Assembly. Adjoining the hall used for the meeting there was an exhibition of drug and chemical manufactures which attracted considerable attention.

Albany was chosen as the place for holding the meeting in 1882.

A more complete report of what transpired will appear in our next issue.

MATERIA MEDICA, PHARMACY, AND THERAPEUTICS

[ORIGINAL COMMUNICATION.]

PRACTICAL INSTRUCTION IN THE USE OF THE MITSCHERLICH POLARISTROBOMETER.

BY EMIL ROSENBERG, M.D., OF NEW YORK.

THE purpose of the following article is to furnish simple but thorough instruction in the use of the "Mitscherlich Circumpolarization Apparatus," with special reference to the instrument as constructed by Mr. August Stendicke,* of New York, in two different forms, viz.: I. The simple instrument, II. The compound instrument (with double plate of quartz, regulator, and telescope).

I. THE SIMPLE MITSCHERLICH APPARATUS.

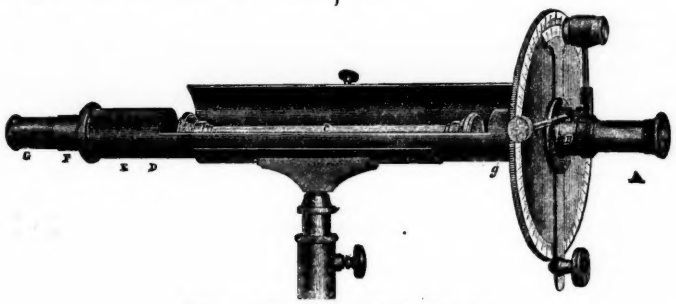
A brass groove, semicircular in transverse section, and which can be closed by a cover of like shape, carries at one extremity, near the light, the permanently fixed polarizing Nicol's prism (or "Nicol"), behind which (between the polarizer and examination tube), a small plano-convex lens is attached. At the other extremity, nearest the eye, the analyzing Nicol's prism is placed, which can be turned around its axis by an index and vernier passing over a circular disc. Upon the latter a graduated circle is engraved, divided into degrees and half-degrees, which again are subdivided by the vernier, so as to allow the reading of minutes. In front of the polarizer (nearest to the light), a lens has been added in a tube removable at option.

The polarizer is permanently fixed in such a position that, by simply placing the index upon 0, the maximum of darkness is presented. At this position the prisms are crossed, at 90° they are parallel (maximum of brightness). Nevertheless the constructor has attached an endless screw to the tube containing the polarizer, by means of which the observer can easily correct the adjustment, if found necessary.

Each instrument is provided with examination tubes 100 and 200 millim. in length. The tubes are closed at both ends with plate-glass discs, pressed against the former by means of screw-caps.

The instrument is fixed upon a vertical support, so that it allows horizontal movement and can be raised and lowered.

The source of light commonly used is a gas Argand-burner, the glass being surrounded by a chimney of porous clay or tin with a lateral opening.



Compound Mitscherlich Polaristrobometer.

A. Telescope.
B. The analyzing Nicol's prism.
g. Screw for adjusting the analyzer.
C. The examination tube.
D. The Soleil's double plate of quartz.
E. The polarizing Nicol's prism.
F G. Regulator for producing sensible tints, consisting of a Nicol's prism and a left-handed quartz-plate.
(The circle is provided with vernier and magnifying lens, movement by rack and pinion).

The apparatus serves for studying the rotatory power of certain organic substances and for the quantitative determination of such substances in solution. The action of these "active" substances consists in a certain modification of plane-polarized light. The phenomena of the latter ought, therefore, to be first studied, as follows.

Remove the lens (that nearest to the lamp), place the instrument near (about 5 cm. from) the lamp, and the index upon 90°. The "Nicols" are now parallel. A bright white circular surface is perceived, if the light is placed near enough, or, an inverted image of the flame in place of the circular surface, if the light is removed to a somewhat greater distance.

Now *cross* the "Nicols" by placing the index upon 0. An almost absolutely dark disc is presented, with a maximum of darkness, viz.: a vertical, intensely black band in the centre of the field, thinning out by degrees towards each side, into a lighter black or gray.

*Other kinds of polarization-apparatus (especially Soleil-Ventzke-Scheibler's saccharimeter) are constructed by Mr. Stendicke to order. Their perfection is attested by a number of well-known practical chemists. Prices:

Mitscherlich's simple apparatus	$35.00
" compound	75.00
Soleil-Ventzke-Scheibler	150.00
Each with two examination tubes of 100 and 200 millim. in length.	
Box (mahogany or fine black walnut)	5.00

The dark disc is limited towards the right and left by narrow illuminated segments of a circle. These bright segments are, with a correct position of the polarizer, of absolutely equal width, and their including chords ought to be parallel and vertical.

The same images are obtained if, between the "Nicols," a tube is introduced containing pure water or any "optically inactive" fluid.

The images are changed by the interpolation of any solid or fluid "active" or "circumpolarizing" substance.

The empiric sign of this change consists in a deflection, a displacement of the images, combined under certain conditions with chromatic phenomena. For the *bright* image the displacement would not be easily apparent; we have, therefore, to rely upon the image of greatest darkness, upon the zero-position.

This latter is, therefore, the starting-point for the observation. The index is placed upon o, and the correct position of the dark image observed, before the interpolation of the active substance.

If now the examination tube, filled with the solution, is brought between the crossed prisms, the following various images will, under various conditions, result:

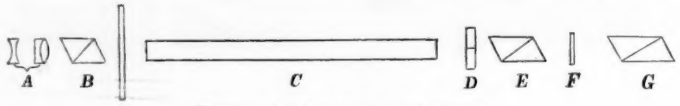


Diagram showing arrangement of parts.

1. If the solution contains only a slight amount of active substance (or if the substance has a low specific rotatory power), nothing will be observed but a displacement of the vertical black band. In this case the index has to be turned towards the right, with right-handed (+) substances, until the vertical band has been brought back again to the centre of the field. (In order to turn the index to the right, the lower part of the handle has of course to be passed towards the left.) The rotation is then completed, and its amount read on the graduated circle. With left-handed substances (—) the index has to be turned towards the left.

2. With somewhat stronger rotatory power or concentration, the dark image of the o point is replaced by a bright, weakly-colored field, without a trace of the dark central band. After turning the index, the dark band reappears, inclosed to the right and left by a colored image, in which red and blue can be distinctly discerned.

3. With strong rotatory power or concentration an intensely colored circular field appears, the left half of which is occupied (with right-handed substances) by blue, the right half by red. Of a black central band under these circumstances nothing is seen. Here we have to rely upon the uniform distribution of red and blue, or upon bringing the *transition tint, i. e.*, the dark-violet tint forming the junction or passage from blue to red, into the centre of the field.

After having thus first studied the phenomena without employing the lens (nearest to the light), observe the difference by using it. The broad black band will be found narrower and sharper, and the advantage of using it will be quickly perceived.

The Vernier: Compare the divisions of the vernier (Nonius) with those of the graduated circle. The index being placed upon o, the space occupied by twenty-nine half-degrees of the large circle will be found divided on the *vernier* in thirty parts, to the right and left of the index. Suppose, now, the index be turned towards the right or left. The index will be found either to coincide with a division of the larger circle, when the amount of rotation is simply read off this circle, or it may not coincide. In this latter case we have to look for the *first* vernier division coinciding with a circle division. The number of this vernier division counted from the index (towards the right with right-handed substances) represents *minutes*.

E. g., suppose the completed rotation having brought the index from o to a point towards the right, beyond 3.5°, and the *first* vernier division coinciding with a circle division is found to be 20, the amount of rotation would be

$$\begin{array}{r} +3^\circ\ 30' \\ \quad\ 20' \\ \hline +3^\circ\ 50' \end{array}$$

As to the technical procedure we may here add: Whenever the solution is sufficiently transparent for a 200 millim. tube, this should be employed. Very often it is only possible, to examine by the 100 or 50 millim. tube. The tubes must possess the exact length, or the error found by measuring must be taken into account. In filling, the tube is best held obliquely, and the fluid poured in in *one* stream, until the tube is over full. The upper glass is then slid over the top side-ways, so as to avoid the formation of air-bubbles. After placing the tube in position, it ought generally be turned once or several times around its axis, in order to obtain a distinct image. Often it will be found necessary to leave the tube at rest for awhile, before making an observation. With any instrument, a series of determinations ought to be made, from which the arithmetical mean is taken. After the completed observation, the tube has to be thoroughly cleaned and dried.

POLARIZATION TABLE FOR THE POLARISTROBOMETER

(Mitscherlich's, Wild's, Laurent's Apparatus).

SHOWING CONCENTRATION (VLPCT; GRM. IN 100 CCM?), CORRESPONDING TO ROTATION OBSERVED THROUGH 200 MILLIM. TUBE.

OBSERVED ROTATION: DEGREES.	MINUTES.	GLUCOSE: $(\alpha)_D$= +53°.	GLUCOSE: +56° ALBUMEN, NEUTRAL SOL.: −56°.	DIABETIC SUGAR: +56.4°.	DIABETIC SUGAR DILUTED TO 11-10.	MILK SUGAR: +58.2°.	CANE SUGAR: +66.5°.
0.016	= 1	0.1572%	0.0148%	0.0147%	0.016	0.0143%	0.0125%
0.033	2	0.031	0.0297	0.0295	0.032	0.0286	0.0251
0.050	3	0.047	0.0446	0.0443	0.048	0.0430	0.0376
0.066	4	0.062	0.0595	0.0591	0.065	0.0573	0.0501
0.083	5	0.078	0.074	0.073	0.081	0.0716	0.0627
0.100	6	0.094	0.089	0.088	0.098	0.0860	0.0752
0.116	7	0.110	0.104	0.103	0.114	0.100	0.0877
0.133	8	0.125	0.119	0.118	0.130	0.115	0.1002
0.150	9	0.141	0.133	0.132	0.146	0.129	0.113
0.166	10	0.157	0.148	0.147	0.163	0.143	0.125
0.183	11	0.172	0.163	0.162	0.179	0.157	0.138
0.200	12	0.188	0.178	0.177	6.195	0.171	0.150
0.216	13	0.204	0.193	0.192	0.211	0.186	0.163
0.233	14	0.220	0.208	0.206	0 228	0.200	0.175
0.250	15	0.235	0.223	0.221	0.244	0.215	0.188
0.266	16	0.251	0.238	0.236	0.260	0.229	0.200
0.283	17	0.267	0.253	0.251	0.276	0.243	0.213
0.300	18	0.283	0.267	0.266	0.292	0.257	0.225
0.316	19	0.298	0.282	0.280	0.309	0.272	0.238
0.333	20	0.314	0.297	0.295	0.325	0.286	0.251
0.350	21	0.330	0.312	0.310	0.341	0.301	0.263
0.366	22	0.345	0.327	0.325	0.358	0.315	0.276
0.383	23	0.361	0.342	0.339	0.374	0.329	0.288
0.400	24	0.377	0.357	0.354	0.390	0.344	0.300
0.416	25	0.393	0.372	0.369	0.406	0.358	0.313
0.433	26	0.408	0.386	0.384	0.423	0.372	0.326
0.450	27	0.424	0.401	0.398	0.439	0.387	0.338
0.466	28	0.440	0.416	0.413	0.445	0.401	0.351
0.483	29	0.455	0.431	0.428	0.471	0.415	0.363
0.500	30	0.471	0.446	0.443	0.487	0.429	0.376
0.516	31	0.487	0.461	0.458	0.504	0.444	0.388
0.533	32	0.503	0.476	0.472	0.520	0.458	0.401
0.550	33	0.518	0.491	0.487	0.536	0.472	0.414
0.566	34	0.534	0.506	0.502	0.553	0.487	0.426
0.583	35	0.550	0.520	0.517	0.569	0.501	0.439
0.600	36	0.565	0.535	0.531	0.585	0.515	0.451
0.616	37	0.581	0.550	0.546	0.601	0.530	0.464
0.633	38	0.597	0.565	0.561	0.618	0.544	0.476
0.650	39	0.613	0.580	0.576	0.634	0.558	0.489
0.666	40	0.628	0.595	0.591	0.650	0.573	0.501
0.683	41	0.644	0.610	0.605	0.666	0.587	0.514
0.700	42	0.660	0.625	0.620	0.682	0.601	0.526
0.716	43	0.676	0.639	0.635	0.699	0.616	0.539
0.733	44	0.691	0.654	0.650	0.715	0.630	0.551
0.750	45	0.707	0.669	0.664	0.731	0.644	0.564
0.766	46	0.723	0.684	0.679	0.748	0.659	0.576
0.783	47	0.738	0.699	0.694	0.764	0.673	0.589
0.800	48	0.754	0.714	0.709	0.780	0.687	0.601
0.816	49	0.770	0.729	0.724	0.796	0.702	0.614
0.833	50	0.786	0.744	0.738	0.813	0.716	0.627
0.850	51	0.801	0.758	0.753	0.829	0.730	0.639
0.866	52	0.817	0.773	0.768	0.845	0.745	0.652
0.883	53	0.833	0.788	0.783	0.861	0.759	0.664
0.900	54	0.848	0.803	0.797	0.877	0.773	0.676
0.916	55	0.864	0.818	0.812	0.894	0.787	0.689
0.933	56	0.880	0.833	0.827	0.910	0.802	0.702
0.950	57	0.896	0.848	0.842	0.926	0.816	0.714
0.966	58	0.911	0.863	0.857	0.943	0.830	0.727
0.983	59	0.927	0.877	0.871	0.959	0.845	0.739
1°		0.9434	0.893	0.8865	0.975	0.859	0.752
2°		1.8868	1.786	1.773	1.950	1.718	1.504
3°		2.830	2.678	2.660	2.925	2.577	2.256
4°		3.773	3.571	3.546	3.901	3.436	3.008
5°		4.717	4.464	4.433	4.876	4 295	3.760
6°		5.660	5.357	5.319	5.851	5.155	4.512
7°		6.603	6.250	6.206	6.826	6.014	5.264
8°		7.547	7.142	7.092	7.801	6.873	6.016
9°		8.490	8.035	7.979	8.776	7.732	6.768
10°		9.434	8.930	8.865	9.752	8.591	7.520
		%	%	%	%	%	%

II. THE COMPOUND MITSCHERLICH POLARISTROBOMETER (WITH DOUBLE QUARTZ-PLATE, REGULATOR, AND TELESCOPE).*

The most important part of this instrument, the double plate of quartz (the "Biquartz") consists of a disc formed of two quartz plates of 3.75 millim. thickness, cut from right- and left-handed crystals across the axis, and joined along their common diameter. One-half of this plate rotates the plane of polarization as far to the right as the other to the left.

This double plate presents, before an active liquid is introduced, *equality* of color with two positions of the polarizing and analyzing "Nicols," viz.: with parallel and with crossed prisms. The tint presented at parallel position, the so-called transition (or sensible) tint (a blue- or rose-violet), is preferred as starting-point on account of its pronounced and rapid transition to other colors. Immediately after introduction of a rotatory substance, the equality of color gives way to a perceptible difference in the two halves of the image. The index is then turned to the right or left, until equality of color is restored, when the angle of rotation is read off.

The prisms are here so arranged that they are brought into the parallel position by placing the index upon 0.

Now, this rose-violet transition tint appears only when sun- or daylight is employed; with an artificial source of light it is replaced by a reddish (pale-rose) tint. A similar modification is produced whenever the active liquid has a distinct color of its own. The regulator serves in these circumstances for reproducing sensible tints.

If daylight can be employed, the regulator tube is removed, and the apparatus is placed near a window, so as to illuminate the divided circle, the observer turning his back to the window. A white sheet of paper, reflecting bright sunlight, is placed in front of the instrument, as a source of light.

Now place the index upon 0, and focus the telescope so that the junction line of the "Biquartz" is sharply perceived, when the two halves of the plate ought to present the uniform transition tint. If the tints are not uniform, adjust the analyzer more accurately by turning the screw *g* very little towards the right or left.

Introduce then a tube filled with a cane-sugar solution and observe the distribution of tints. This ought to be done once for all, in order to be able to discern the direction of rotation (+ or —) in unknown fluids.

If lamplight has to be employed, or if the solution itself is colored, proceed as follows:

1. Remove the regulator tube.

2. Place the index upon 0, use the telescope and screw (*g*) as above, until equality of color is obtained.

3. Replace the regulator tube and turn it, by its milled head, slowly round its long axis while observing. Various tints will now appear, and the observer has to see whether for each of these tints the uniformity in both halves of the image is retained. Should this not be the case, the screw *g* has to be used again for correcting the adjustment of the analyzer. Finally any tint presented by turning the regulator may be chosen as a starting-point. Generally a reddish tint, which shows a rapid transition from equality to difference, will be preferred.

4. Introduce the examination tube and determine the angle of rotation by the restored uniformity of tint.

The telescope has to be focussed again after introduction of the tube, and the observation must not be made longer than ten seconds at a time.

CALCULATION.

The amount (angle) of rotation depends upon the specific rotatory power of the substance, being proportional to the concentration of the solution, and to the length of the observed layer (length of the tube). By the term "specific rotation" is meant the rotation produced by one gram of the active substance dissolved in one cubic cm. of inactive fluid, observed by yellow light (α)j, or the light corresponding to the Fraunhofer line *D*, $(\alpha)_D$, and by 1 decimeter (0.1 M. or 100 millim.) length of the observing tube.

In the formulæ below

$(\alpha)_D$ = specific rotatory power. } Expressed in degrees and decimals of a degree.

$\pm \alpha$ = observed rotation. }

p = amount of active substance (grm.) in 1 ccm. fluid.

l = length of observing tube employed, expressed in decimeters.

200 millim. = 2
100 " = 1
50 " = 0.5
25 " = 0.25

From the observed rotation, the known specific rotation and the length of the tube, the amount of the active substance in 1 cc. of the solution is calculated by the following formula:

$$p = \frac{\pm \alpha}{(\alpha)_D . l} \quad (1)$$

From this formula follows:

$$(\alpha)_D = \frac{\pm \alpha}{p.l} \quad (2)$$

$$\pm \alpha = (\alpha)_D . p . l \quad (3)$$

In the formula, p represents hundredths parts of one per cent. The value found for p must, therefore, be multiplied by 100, to find the percentage.

This may be expressed by the following for-

* See p. 163 for illustration.

mula, in which C means concentration or volume per cent.

$$C = 100\ p = \frac{100. \pm \alpha}{(\alpha)_D . l} \quad (4)$$

The corresponding weight per cents are obtained by dividing these volume per cents by the specific gravity of the solution.

If a solution has been diluted with an inactive medium (*e. g.*, with sugar of lead solution, for decolorization or clarifying), the dilution must be taken into account.

A solution which would, for example, polarize 25°, deflects only 22.5°, if diluted by acetate of lead in the proportion 10:11. We have then to add one-tenth to the observed rotation or to the computed amount.

In order to facilitate the work, by obviating tedious calculations, the author has prepared a simple table. This holds good for any polaristrobometer, not only for Mitscherlich's, but likewise for that of Wild or Laurent.

Note to Table.—The angle of rotation observed through the 100 millim. tube must be multiplied by 2; the angle of rotation observed through the 50 millim. tube must be multiplied by 4; the angle of rotation observed through the 25 millim. tube must be multiplied by 8, in order to find in this table the corresponding amounts.

Or the amounts may be multiplied by 2, 4, 8.

In the first column the equivalents of minutes are given in decimals of a degree for convenience in calculation, for substances not comprised in this table.

The fifth column refers to diabetic urine, diluted by lead solution for decolorization, in the proportion of 1 part of lead sol. to 10 parts of urine.

Table for Test Solutions of Cane Sugar: $(\alpha)D = +66° 5$.

	100 mill.	200 mill. tube.
0.1%	4′	8′
0.5%	20′	40′
1.0%	40′	1° 20′
10.0%	6° 39′	13° 18′

(*To be continued.*)

A New Gas-Generator.

THE generator proper, constituting the lower vessel in the accompanying illustration, and having the shape of an Erlenmeyer's flask, is filled to above the upper tubulus with fragments of quartz or glass, and upon these the zinc, marble, or other material is placed. A funnel-shaped vessel is fitted to the flask through a well-ground neck, and within the funnel is fitted a hollow glass-stopper, terminating in a glass tube, bent at right angles and intended to deliver gas. When the apparatus is first started, the lower flask is properly packed, and afterwards a sufficient amount of acid is allowed to flow upon the zinc, etc., by gently lifting the stopper, to fill the lower flask as far as the zinc, when the generated gas —the exit tube being closed—will drive the excess of acid through the lateral tubulure into the receptacle above, where it will remain until the exit tube is opened, when it will be siphoned back in proportion to the rapidity with which the stream of escaping gas is regulated. This regulation may be made very perfect, so that the apparatus will deliver constant volumes of gas for hours (up to twelve hours). From time to time the saturated solution in the lower flask may be drawn off through the lower tubulus, and fresh acid be added to the funnel. The apparatus may be emptied, cleaned, and refilled, when necessary, in a very short time.*—*Repert. d. Analyt. Chem.*, 1881, No. 1.

On Coniine and its Hydrochlorate and Hydrobromate.

PROF. A. W. HOFMANN, of Berlin, has found that the hitherto accepted formula for coniine, namely, $C_8H_{15}N$, is defective by 2 hydrogen atoms, and should be $C_8H_{17}N$. Hence, all previous conclusions regarding the supposed identity of artificial products of the formula $C_8H_{15}N$ with natural coniine, are based on error. The new formula has been derived partly from careful analyses of the hydrochlorate and hydrobromate, the preparation of which will interest pharmacists.

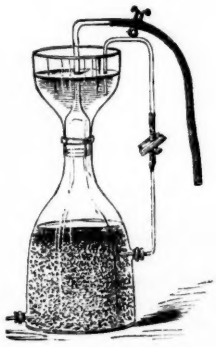


Fig. 2.
Gas Generator.

Hydrochlorate of Coniine, $C_8H_{17}N.HCl$, is easily obtained by dissolving coniine in anhydrous ether, and treating the solution with *dry* hydrochloric acid gas. The salt is instantly separated as a brilliant white crystalline mass, which only needs to be strained off. This salt is extremely soluble in alcohol and water, but it is not in the least hygroscopic. It may be dried, without decomposition, at 100° C. (212° F.).

Hydrobromate of Coniine, $C_8H_{17}N.HBr$, may either be made like the preceding, only substituting hydrobromic acid gas for hydrochloric, or it may be prepared—and in a very pure condition, but with a slight loss of product—by adding bromine, in drops, to a solution of coniine in anhydrous ether, as long as the color of bromine disappears. There is produced a substi-

* This apparatus is manufactured by H. F. L. Stender, Glashütte Lammspringe, Post-Office: Gross-Rhüden, Hannover, Germ. Height of lower flask 35 *cm.*, up to the edge of funnel 55 *cm.* Price 20 *marks*.

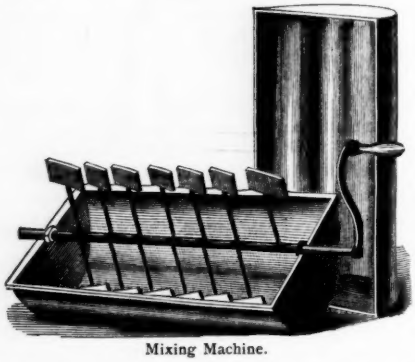
tution-product of coniine, which remains dissolved in the ether, and causes a trifling loss, while at the same time the bromhydrate separates. This salt can likewise be dried at 100° C. without decomposition.—*Ber. d. Deutsch. Chem. Ges.*, 1881, 705.

[Original Communication.]

A NEW MIXING MACHINE.

BY CHARLES RICE.

The thorough mixing of large quantities of powders is often a tedious process, particularly if this has to be done by means of a mortar and by repeated passing of the mixture through sieves, for the purpose of producing a homogeneous mixture. The undersigned has used, for some time, a simple mixing apparatus, which is illustrated in the accompanying figure, and which gives entire satisfaction. It hardly requires a detailed description, except this, that the upper half cylinder, which is figured standing on its end, fits snugly into a groove contained in the edge of the other half-cylinder. The apparatus is mounted in a wooden frame—



Mixing Machine.

not figured here—which serves to steady it and also to protect it from injury. The capacity of the apparatus may be, of course, regulated according to the wants of any one who may require it. That constructed for the undersigned has a capacity of about 8 gallons; having a diameter of 11 inches and a length of 20 inches. A $\frac{3}{4}$ inch gas pipe forms the axle, through which pass 7 pieces of $\frac{1}{4}$ inch wire, bearing paddles on each end, which are turned in opposite ways. Any good tinsmith should be able to construct the apparatus from the drawing and description here given.

A German Druggist of New Orleans has invented an improved process for clarifying sugar-cane juice, to which he facetiously gives the appellation, *Chemisches Zuckerrohrsaftunreinigkeitenentfernungsschnellverfahren*. A purist suggests to use in place of the foreign word "apotheker" the German expression, *Gesundheitswiederherstellungsmittelzusammenmischungsverhaeltnisskundiger*. —*Pharmacist* (Chicago).

[Original Communication.]

KERNER'S VOLUMETRIC ASSAY FOR CINCHONIDIA IN QUINIA SULPHATE.*

TRANSLATED BY CHAS. W. TEETER, PH.C.†

The principles of this method are well known and need but brief mention. Of the neutral sulphuric acid salts of cinchona alkaloids the sulphate of quinia is the most difficultly soluble in cold water, while on the other hand the hydrate of quinia is the most easily soluble in ammonia-water of all the other cinchona bases brought into consideration.

The cold saturated solution of chemically pure quinia sulphate contains a definite quantity of alkaloid, which, with an equally definite amount of ammonia-water, is at first precipitated from the solution, and by the addition of a still greater quantity is again re-dissolved. This re-dissolving of the separated alkaloids may, with some practice, be observed with great sharpness (by dropping exactly).

If the volume of an ammonia-water which is necessary to bring about the reaction in a fixed unit volume (at a normal temperature, 12–24° C.) of a cold saturated solution of authentic quinia sulphate be known, then the greater consumption of ammonia by similar operations with a questionable salt enables one to approach very closely to the absolute quantity of accompanying alkaloids.

The manner of titrating is very simple: triturate and moisten 5 grams of the doubtful sulphate in a small agate or porcelain mortar, with cold distilled water, to a homogeneous pap, and rinse the mixture into a stoppered flask, so that on the whole exactly 50 cc. of water are used. Let stand 12 to 18 hours, with frequent cautious shaking, then place (together with the vessel containing the ammonia) into cold water, and when all have attained the same temperature filter through dry filter paper. For the ammonia-water a long burette with fine divisions ($\frac{1}{20}$ cc.) is necessary, which will also permit a convenient estimation of $\frac{1}{100}$ cc.

The saturated sulphate solution is measured into test-glasses, with an exact 10 cc. pipette, and the titration conducted as follows: let 5 cc. of the ammonia flow at once into 10 cc. quinia solution; close the test-glass with the finger and give it two or three circular motions without shaking. The greatest part of the quinia is now precipitated and again dissolved, the liquid being still cloudy. The ammonia-water is now added in smaller portions, $\frac{3}{10}$ $\frac{2}{10}$ $\frac{1}{10}$ cc., and at last *drop by drop*, with the circular agitation after each addition, until the liquid becomes perfectly

* Abstract of: Dr. G. Kerner: *Ueber die Prüfung des käuflichen schwefelsauren Chinins auf fremde Chinaalkaloïde*. Arch. der Pharm. [3], vol. xvi., p. 186 seq.

† Of Ann Arbor, Mich., and communicated by Prof Albert B. Prescott, M.D.

clear. It is well to wait five to ten seconds in each case before the next following portion of ammonia is added. The *end reaction* is that point at which complete clearing takes place.

Having determined the amount of ammonia necessary for normal quinia treated in the same manner, the excess of ammonia required for the doubtful salt will indicate the amount of cinchonidia* present. Each $\frac{3}{10}$ cc. ammonia (sp. gr. 0.92) represents one milligram ($\frac{1}{10}\%$) of crystallized cinchonidia sulphate. Should this be present in quantities of 2% or more, the results will be inaccurate, as the precipitated alkaloid becomes somewhat gelatinous, difficult of solubility, and the end reaction not sharply defined.

This inconvenience may be avoided by diluting a portion of the saturated solution to a fixed volume and treating a fractional part of this, or by preparing the original substance in the proportion of 1–50, 100, 200, or more of water.

The average of at least four trials should be taken to arrive at the nearest practical results.

As the solutions of both quinia sulphate and ammonia deteriorate by long standing they should be freshly prepared for each operation.

Quinine Manufacture in Italy and Germany.

An interesting report has been published by Mr. Crain, of Milan, on the manufacture of sulphate of quinine in Italy, with suggestions as to the cultivation of the cinchona tree in the United States. The manufacture of salts of quinine is an important Italian industry. It has been carried on at Milan and Genoa since 1870. Twenty-two thousand five hundred pounds are consumed yearly in Italy, of which one-half is made at Milan, 6,750 lbs. at Genoa, and the balance imported from Germany. Forty-five thousand pounds of quinine and salts of quinine are produced in Italy. The production of the world is estimated at from 230,000 to 260,000 lbs. per year, as follows: Germany, 56,250 lbs.; Italy, 45,000 lbs.; France, 40,000 lbs.; England, 27,000 lbs.; America, 63,000 lbs.; India, 12,250 lbs. The two Italian factories produce 45,000 lbs. of the sulphate of quinine, viz., 40,500 lbs. at Milan, and 4,500 lbs. at Genoa. The first of these employs 45 hands, the second 15. The Milan factory ships largely to all parts, furnishing large supplies to Russia, France, and Austria. England receives two-thirds of her supply and Holland one-half of hers from the same source. Efforts will be made to acclimatize the cinchona in Italy, to increase the supply and lessen the cost of the product. Its successful culture in India and Ceylon encourages the belief that it will grow wherever the soil is dry, the rainfall large, and climate temperate. Many parts of the United States fulfil these conditions, [? Ed. N.R.] and notably where its product is needed. The culture of the cinchona in America would cheapen an indispensable medicine, and open a new industry to capital and labor. In this connection some facts reported by Mr. E. Van Eetvelde, the Consul-General of Belgium in India, are instructive. He reports that the best varieties of cinchona have been successfully acclimatized in British India. The Government there cultivate chiefly the *Cinchona succirubra*, which contains a large quantity of febrifuge alkaloids, and the *Cinchona Calisaya*, which is better suited to the manufacture of quinine. The culture of the first has been successful. Uncertainty still exists as to the *Cinchona Calisaya*, and the Bengal Government are examining the plantations of Java, where it has been cultivated with entire success. The cinchona plantations are in two distinct regions of India—in the north of the Neilgherry Hills, in the Madras Presidency, and on the slopes of the Himalayas. Those of the Government are as yet the most important, covering 1,300 acres on the Neilgherry Hills, and nearly 3,000 acres in Sikkim. There are several private plantations of later date already producing marketable bark. The red bark (*Cinchona succirubra*) has much of febrifugal alkaloids, but little quinine. It was important, therefore, to determine the therapeutic value of the alkaloids and the cheapest means of extraction, in order to furnish a good febrifuge at a moderate price. The Medical Commission recommended the extraction of cinchonine, cinchonidine, and of quinine by simple means, and the Government now sells a mixture of these three alkaloids under the name of "Cinchona febrifuge." As the price does not exceed *2s. 7d.* per oz., this febrifuge is used in nearly all the hospitals of India, and sold in large quantities to the public. The chief surgeon of the North-east province reports that the doctors are unanimous in declaring that the "Cinchona febrifuge" is a medicine of recognized efficiency in the treatment of ordinary intermittent fevers, and that it is an excellent prophylactic for those who live or travel in marshy countries. Most doctors are, however, of the opinion that it is inferior to quinine as a therapeutic agent, that its effect is slower, and that it is insufficient to cure severe intermittent fevers. That it is a medicine of value is shown by the increase in its use in the Indian hospitals, which, as the following figures show, is remarkable: 1874–75, 48 lbs.; 1875–76, 1,940 lbs.; 1876–77, 3,750 lbs.; 1877–78, 5,162 lbs.; 1878–79, 7,007 lbs. The hospitals took more than 5,500 lbs. in 1878–79, and as the use of quinine diminished in the same time about as much, it is a proof, considering the cost of the last-named alkaloid, that the Indian Government saved about 25,000*l.* At the present time the Government chemist of India is trying to produce a better febrifuge by mixing three sulphates, viz., cinchonine, cinchonidine, and quinine, of which the cost would be a little higher. Finan-

*Quinidia and cinchonia sulphates are seldom present.

cially the plantations of Sikkim gave last year a net profit of nearly 4,000*l.*, although not fully developed, or 4½ per cent on the sum invested.

From an official report recently published we note that within the German Empire there are five quinine manufactories, of which Prussia, Wurtemberg, Baden, Brunswick, and Hesse have one each. The most important German establishments are those of Zimmer, in Frankfort-on-the-Main; of Böhringen, in Mannheim; and of Jobst, in Stuttgart. The Zimmer establishment was founded by Dr. Conrad Zimmer in the year 1837, and soon acquired considerable renown. It is now a very complete and extensive manufactory; it consumes about 50 bales of cinchona bark, and produces about 50 kilos. of quinine daily. The principal preparations of the German establishments are the sulphate and muriate of quinine. Of unbleached or so-called hospital quinine, made from various alkaloids, they produce very little; while the cinchonidia sulphate is manufactured in large quantities, especially for export to the States. The efficacy of this drug is said to be similar to that of quinine, while its price is only one-third or one-fourth that of the sulphate of quinine. Amongst the numerous other salts and preparations of quinine made in Germany are chiefly to be mentioned the preparations of the amorphous quinines, especially the muriate. These preparations, being perfectly soluble, are much employed for injections in cases of fever resulting from wounds, and are therefore of particular importance to army hospitals. The German manufacturers get their cinchona bark mostly from London or Paris, which are the principal markets for that commodity. The bark is also brought extensively to Amsterdam from Java by the Dutch Government, and of late years occasional lots have been imported at Bremen.

The Zimmer factory at Frankfort two or three years ago bought large territories in Java, and now employs about 200 natives in clearing ground and planting cinchona.—*Chemist and Druggist.*

Borate of Quinoidine.

Dr. J. E. De Vrij, of The Hague, has lately modified the method previously given by him for the preparation of borate of quinoidine (chinoidine), because it was found frequently to contain free boric acid. The new method is stated to render it possible to prepare a pretty uniform borate from the various commercial sorts of quinoidine. But the best results are obtained with that kind of quinoidine which, when warmed with 2 parts of boric acid and 10 parts of water, is completely dissolved without leaving more than a trace of insoluble matter. Such quinoidines are those obtained from the quinine works of C. Zimmer in Frankfurt and Ph. Whiffen in London. The ordinary quinoidine of Zimmer yielded 50% and over of borate, while a specially purified lot, from the same factory, yielded 75%. The improved process is as follows:

Two parts of quinoidine and 1 part of boric acid are heated with 20 parts of distilled water in a covered vessel to incipient boiling, whereby a portion of the quinoidine, namely the so-called amorphous alkaloid (Sertürner's *chinoidin*, or Hesse's *diconchinin*) is dissolved in combination with boric acid. The vessel is then removed from the fire, and, after a momentary rest, the hot, clear, dark-brown and alkaline liquid poured through a funnel containing some moistened picked cotton, in order to remove some resinous matters floating in the liquid. The insoluble residue, dried on the water-bath and finely powdered, yields a brown powder, which no longer melts on the water-bath, and which represents a mixture of various unknown bodies, which are indeed almost entirely soluble in mineral acids, but do not contain any more of the amorphous alkaloid. After removal of the insoluble matter, the clear liquid is replaced in the cleansed vessel and heated to boiling, when a fresh quantity of dark-brown resinous body separates. By allowing the liquid to stand at rest for a few minutes, it may be poured off clear, when it is again raised to boiling, and these manipulations must be repeated until no more matter separates on boiling and the liquid, after cooling, is perfectly transparent. The liquid is now evaporated until it is equal in weight to the quinoidine used, and then set aside for at least one night at a temperature of not exceeding 15° C. (59° F.). In proportion to the quality of the original quinoidine, there will be found more or less boric acid crystallized out, which is collected, gently expressed, then dried and reserved for the next operation. The clear dark reddish-yellow liquid, which is distinctly alkaline to litmus paper, is now evaporated on the water-bath, until it forms a dry yellowish powder, or else it is converted into scales.

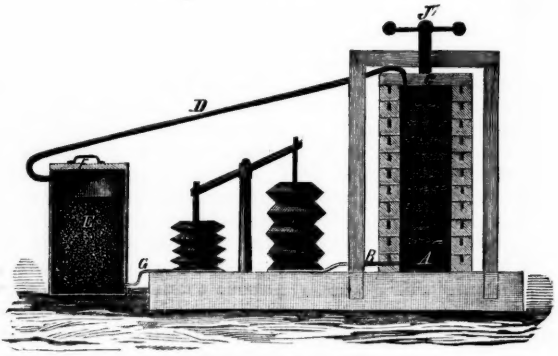
Well prepared borate of quinoidine yields, with 3 parts of cold water, a perfectly clear, dark-yellow, strongly alkaline solution. A 10% aqueous solution, on the addition of hyposulphite of sodium, must remain perfectly clear. 1 gm. of the borate in aqueous solution, mixed with soda and shaken with chloroform, should yield to the latter solvent at least 0.54 gm. of amorphous alkaloid. It is not very hygroscopic, but, since it is apt to attract moisture gradually, it must be preserved in well-closed bottles.

In view of the complex composition of the commercial quinoidine, Dr. De Vrij considers the borate to be the most uniform preparation, and the most suitable form of employing it therapeutically. It has been used with excellent results in intermittent fevers by Dr. Hermanides, of Geldermalsem, and by Dr. P. Simpson, of Bankipore (Bengal).—*Haaxman's Nieuw Tijdsch.* and *Pharm. Zeit.*, No. 22.

The Preparation of Perfume-Pomades.

WE have, on a previous occasion,* described the process of "maceration" or "enfleurage," that is the impregnation of purified fat with the aroma of certain scented flowers which do not yield any essential oil in paying quantities. At present we wish to describe an apparatus which is used in several large establishments in Europe for obtaining such products on the large scale and within as short a time as possible. The drawing gives the idea of the general arrangement of the parts rather than the actual appearance of a working apparatus, for the latter will have to vary according to the conveniences and interior arrangements of the factory.†

A series of frames with wire-sieve bottoms are charged with a layer of fat in form of fine curly threads, obtained by pressing or rubbing the fat through a finely-perforated sieve. The frames are then placed one on top of the other,



"Ensoufflage" Apparatus.

and, to make the connection between them air-tight, pressed together in a screw-press. A reservoir *E*, is charged with a suitable quantity of the flowers, etc., and tightly closed with the cover, after which the bellows are set into motion by any power most convenient. Scented air is thereby drawn from the reservoir *E*, through the pipe *G B*, towards the stack of frames containing the finely divided fat, which latter absorbs the aroma, while the nearly deodorized air is sent back to the reservoir by the pipe *D*, to be freshly charged and again sent on its circuit. This apparatus is said to facilitate the turning out of nearly twenty times the amount of pomade, for the same number of frames and the same time, as the old process of "enfleurage." It might be called the "ensoufflage" process.

Cause of Reddening of Carbolic Acid.

MR. ED. FABINI has observed that commercial carbolic acid, if brought in contact with copper or copper-alloys (brass, etc.), became red after a few days, and that its aqueous solution had acquired an acid reaction. On further examination he found that the commercial acid had an acid reaction in nearly every instance, which probably facilitated the solution of minute quantities of the metal. Different specimens of the acid differed in the degree to which they became colored, and it was noticed that the color was least intense if the acid was warm. He, therefore, concluded that another agent participated in the reaction, and as Dr. Hermann Hager had ascribed the reddening to ammonia,* he studied the effects of the latter upon his acid. On exposing some solution of ammonia under a glass globe, in presence of some slightly reddened acid, he found that the latter acquired an intense red color after twelve hours. One drop of ammonia added to carbolic acid contaminated with copper colored the acid dark-red in three hours. And on adding one drop of solution of ammoniacal cuprous oxide or of ammonio-sulphate of copper to perfectly colorless carbolic acid, the latter turns dark-red in a few hours, and the tint is exactly identical with that of the commercial acid which has gradually reddened apparently of its own accord. He, therefore, concludes that the reddening caused by ammonia is primarily due to the presence of traces of copper, which latter is probably derived from the traces of copper contained in the coating of tinned iron vessels, in which the acid is usually brought in the market. Even very minute traces of copper appear to be sufficient to produce this result. It remains now to be shown whether spectrum analysis will be able to confirm the presence of copper in reddened carbolic acid.—*Pharm. Post* and *Pharm. Zeit.*, 1880, No. 101.

Apparatus for Continuous Displacement.

DURING the exhaustion of very finely powdered substances in the usual forms of extraction-appa-

* NEW REM., 1877, 339.

†Our illustration has been taken from *C. Hofmann, Chemisch-technisches Universal-Receptbuch*, 8vo, Berlin, 1879, p. 207.

* See NEW REM., 1880, 148.

ratus, in which the lower orifice is closed by a pellet of cotton or similar material, it happens not unfrequently that minute particles of the material are carried into the liquid, in consequence of which the latter has afterwards to be filtered, which operation is usually attended with some loss of substance. On the other hand, if the pellet of cotton is compressed too much, or if the powder to be exhausted has been pressed down too tight, the rate at which the liquid percolates will not correspond with that at which it is redistilled, so that either the percolator will run over or the heat will have to be withdrawn for a time. The introduction of small filters into the tube itself is not easy, and, even if accomplished successfully, it frequently happens that the powder, packed imperfectly, will not be thoroughly exhausted.

Weigelt's Apparatus.

Mr. C. Weigelt, of Rufach, proposes, therefore, to modify the Zulkowsky-Wolfbauer extraction apparatus by attaching to the outlet of the percolator, within the flask, a small filter. Upon the lower end of the inner percolator-tube a slit cork is pushed (slit in order to permit an equalization of the vapor-tension outside and inside of the filter), and upon this is fitted a small bulb attachment, upon which is fastened the small filter.—*Repert. d. Analyt. Chem.*, 1881, No. 1.

The Cultivation of Rhubarb in France.

THE cultivation of *Rheum undulatum* and *R. Rhaponticum* has for some time past been carried on profitably at Clamart, near Paris, and the products of both plants, as so cultivated, are confounded in commerce under the name of French rhubarb. Recently M. Gallais has been making some experiments in the cultivation of *Rheum officinale* at Ruffec, in the Charente department, and he has communicated his manner of proceeding and results to the Paris Societé d'Acclimatation.*

In the selecting of a suitable spot for the experiment M. Gallais states that he was guided by the following considerations: The *Rheum officinale* grows in Asia, between the 30th and 39th parallels of latitude, at an elevation of 4,000 feet above the sea level. The isothermal line of 12.9° of temperature passes by Pekin, of which the latitude is 39° 54′ 13″ N., and above Milan rises to latitude 45° 54′, running to the west of Europe. By taking this isothermal line and adding half a degree of temperature for each degree of latitude towards the south, and deducting one degree of temperature for each 172 metres of elevation above the level of the sea, he arrived at the conclusion that in the natural habitat of the plant the average climatic temperature was 19° in summer and zero in winter. Ruffec, the place where M. Gallais' experiment has been carried on, is situated in latitude 46° 11″ N., longitude 2° 8′ 17″, has an average temperature of 17° C. in summer and 1.2° C. in winter, and is at an elevation of 96 metres above the sea level.

According to the analyses of Frémy and Pelouze the rhubarb plant is rather rich in potash and sulphuric acid, less so in silica, more or less rich in lime, and rich in phosphoric acid. The soil at Ruffec is calcareous, sandy, and very nitrogenous, being composed partly of sands proceeding from old degradations. These sands contain a considerable abundance of silicious and aluminous matters. The soil is very permeable, requiring during the summer months about 5 cubic meters of water per acre.

M. Gallais commenced operations with a plant obtained from Dr. Giraudeau, which in its turn was derived from the original plant grown in the Botanical Garden of the Paris Medical School, from which the species *Rheum officinale* was described by Professor Baillon, in 1872.†

The plant cultivated in the shade, with a northern exposure, and in moist places, developed a luxuriant vegetation, both in the size of its root and the amplitude of the leaves. But the product under such conditions appears to have been of doubtful quality.

Whilst working upon the plant in the spring a very short stem was noticed, appearing like a ball covered with black scales, from which issued in the month of March an enormous bud, resembling, both in size and color, a hen's egg. This bud gradually developed and gave off leaves, which in the first year of the plantation attained a diameter of one meter.

In the month of June, desiring to develop a vigorous vegetation, while preserving the medicinal principles, M. Gallais dressed each of the plants with 100 grams of Peruvian guano. Being freely watered the root then grew considerably,

* *Bulletin* [3], vol. vii., p. 667.

† See *Pharmaceutical Journal* [3], vol. iv., p. 690.—We have placed "Baillon" instead of "Planchon," which is in the original.—ED. N. R.

and formed upon every side axillary buds, which produced in their turn leaves that were smaller than those which issued from the parent stem.

Such buds in developing give rise in the prolonged stalk to changes, which upon section become apparent, as the marblings that are held as characteristics in commerce and are the work of nature only. The plant was left during the second year with only such attention as was necessary to gather strength, and to allow its cellular structure to become more compact by the concentration of its particular juices.

The collection was made at the end of the second year; in the case of the plant growing spontaneously the Chinese are said not to make a collection until the end of the sixth year. The art of cultivating this plant for medicinal purposes M. Gallais considers to lie not only in assisting the growth of the plant, but in favoring the development of the active principles, so that the plant may arrive in a couple of years at the stage which, when growing wild, it attains in six. The known characters of French rhubarb he attributes to the collection having been made before the plants have arrived at maturity. As to reproduction M. Gallais has obtained the best results with offshoots. At Ruffec the plant seeds with difficulty in the second year, and its cultivation from seeds is not always successful, especially in rainy and cold seasons.

Every second year, in July or August, according to the season and the growth of the plant, the roots or prolonged stems were collected, and from these stalks a considerable number of offsets or buds were separated with a knife. The offsets were then planted quicuncially in well-prepared soil, with a clear interval of a meter between each. As soon as the rainy and cold season set in these offsets commenced to develop, and continued during the autumn, forming rounded roots, which have supported the severest cold of the district, reaching 13° below zero.

Last year M. Gallais possessed eighteen plants, which when pulled up, cleansed, and dried, yielded 28 kilograms of product, described as being of good quality, and samples of which were exhibited to the Society. The gathering and drying, however, are looked upon by M. Gallais as more important operations than even the cultivation.

In the month of August the leaves of the plant become completely dry, and a period arrives when usually the soil surrounding the stem cracks and exposes the enormous roots. It is just at this time of apparent stagnation that M. Gallais pulls up the roots and divides them most artistically into pieces to imitate those imported, whether from Tartary, Russia, or Persia. These pieces are cleansed carefully, and thrown at once into clean water that has been acidulated by some vinegar or a few drops of sulphuric acid, in order to prevent their becoming blackened or taking a bad color through exposure to the air. After a momentary immersion they are drained on hurdles and placed immediately in a stove at a temperature of 30° C. This operation has for its object to form a hard casing round the pieces, to compress the juice and to prevent mouldiness and consequent fermentation. After some days of continued drying the pieces are strung upon cords, so as to form large chaplets, and these are hung in a bake-house or kitchen chimney, or, when the quantity makes it worth while, in a stove. It is said that the Tartars attach small chaplets of rhubarb to the horns of their goats and sheep, and thus dry them by exposure to the sun's rays. M. Gallais thinks, however, that another account is more correct, which says that the rhubarb, cut into fragments and cleansed, is placed by the natives upon slowly heated stones, and carefully turned from time to time, being afterwards strung to complete the drying process. He is inclined to believe, however, that a quicker drying would be preferable, and proposes to place some of his next yield in an oven immediately after the removal of the bread.

Last year M. Gallais made the experiment of drying the root in the sun, but the result was not satisfactory. The thick pieces dried slowly and became completely decolorized instead of retaining their dirty yellow tint, whilst the cellular tissue underwent a considerable alteration, due to a slight fermentation. M. Gallais considers that these alterations would be prevented by a rapid drying, and the juice being concentrated in the interior of the piece, its aroma would be preserved, whilst the pieces would consequently acquire a commercial value in proportion to their thickness.

M. Gallais' operations have as yet been carried on upon a limited scale, but he makes an estimate in which he values the product at six francs per kilogram, from which it would appear that the cultivation could be carried on profitably.—*Pharm. Journal*, March 12th.

Simple Method of Determining the Boiling Point.

THE determination of boiling points in chemical investigations is of great importance, but the methods heretofore employed are not free from defects, inasmuch as they either yield inaccurate results or else consume and waste more or less of the substance to be examined. Mr. B. Pawlewski, therefore, recommends the process here described, as being free from all these defects.

The flask *K K*, of the capacity of 100 *cc.*, is half filled with glycerin, or sulphuric acid, or aniline or paraffin. Its neck is closed by a tight-fitting stopper, having a small lateral notch (to allow the escape of expanded air) and a central hole through which is passed a long, thin-walled tube *E*, the lower end of which dips into the glycerin, etc. Near the mouth of this tube is a minute lateral opening *O*. The tube itself is closed with a cork bearing a thermometer reach-

ing to near its bottom. When using the apparatus, a few drops (0.5 to 1.5 cubic centimeters) of the liquid to be examined are introduced into the tube *E*, and the stopper with thermometer having been inserted, the flask is rapidly heated. The mercury will rise in the thermometer and there will be a period when it will remain stationary for several minutes. This is the boiling point looked for. The mercury remains at this point as long as there are traces of the liquid in the tube, although the temperature of the surrounding glycerin is much higher than the boiling point of the examined liquid.—*Berichte d. Deutsch. Chem. G.*, 1881, 88.

Pawlewski's Apparatus.

The Inflammability of Vegetable Substances by Nitric Acid.

In consequence of the burning of a freight car during the fall of 1879, on one of the railways in Baden, which was suspected to have been caused by nitric acid, Prof. R. Haas, of Carlsruhe, was called upon by the Government to report whether that acid could produce combustion or not. In the experiments made to solve this question the conditions which might be supposed to exist in freight cars containing nitric acid were imitated as far as possible. Small boxes of a capacity of 10 to 16 quarts were charged with variable proportions of hay, straw, tow, and blotting paper—all of which substances are used in packing—and placed within larger boxes, while the space between them was filled with hay or tow, to prevent too rapid a radiation of heat, because the experiments were to be conducted in the open air, and the outer box at the same time represented the walls of a railway car. The material contained in the inner box was now saturated with acid, and rather tightly compressed, so that when the cover was put on it was pretty well filled. At first reddish and afterwards whitish vapors were given off, finally a distinct smoke. On lifting the cover, strongly glowing patches could be seen, which rapidly increased all through the contents, and which broke out in bright flames on access of free air or gentle fanning.

With red fuming acid, or with acid of spec. gr. 1.48, these results were obtained very rapidly and within a few minutes. With ordinary acid, of spec. gr. 1.395, it required somewhat more time, and the action was less energetic in the beginning; but, in three different trials, after about twenty minutes the same result was finally obtained, provided the material was packed tightly in the box and was thoroughly saturated in its successive layers.

It seems quite probable that even a weaker acid can produce the same result in larger bulk and during warm weather in a confined space which prevents rapid cooling. Hitherto it has often been doubted that spontaneous combustion could be caused under such circumstances, but the above experiments and results are certainly incontrovertible.—From *Ber. d. Deutsch. Chem. Ges.*, 1881, 597.

Colorimetric Assay of Morphine in Opium by Means of Iodic Acid.

[Abstract of a paper by Dr. E. Mylius.*]

The reaction of morphine upon iodic acid has already twice been made the basis of a method of assay, namely, by Stein† and by Neubaur,‡ neither of which has been much followed in practice.

Stein's Process: 0.1 gm. of opium is extracted by boiling with 100 gm. of water acidulated with sulphuric acid, to which 0.2 gm. of sulphate or acetate of copper have been added. 6 cc. of the filtrate are treated with 0.06 gm. of iodic acid and shaken with 3 cc. of chloroform free from alcohol. If the chloroform is much colored the last step is repeated upon 3 cc. of the filtrate diluted with 3 cc. of water, and this is continued with variations until, at a certain stage of dilution, the chloroform has only a very slight trace of color. In this case the dilution of the liquid corresponds to 1 part of morphine in 20,000 of water, from which fact, compared with the known degree of dilution, the total quantity of morphine is calculated. Stein adds that alcohol, acetic acid, hydrochloric acid, ammonia, and fixed alkalies, as well as the application of heat, prevent or weaken the coloration, and that opium contains certain substances which, like morphine, reduce iodic acid, and which are precipitated by sulphate of copper.

Neubaur's Process differs from the preceding by employing carbon disulphide to remove the separated iodine, and determining the latter by titration.

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* In *Pharmac. Centralhalle*, 1881, Nos. 9–10.
† *Arch. d. Pharm.*, 198, 150.
‡ *Zeitsch. f. anal. Chem.*, 9, 331.

Dr. Mylius has now taken up the subject again and studied the circumstances under which the above reaction took place, together with the causes which tend to interfere with it. His results may be summarized as follows: Aqueous solutions of sulphate of morphine always separate (under like circumstances) the same amount of iodine from iodic acid, and, if the proportions below mentioned are observed, the separation is complete in a few minutes. On prolonged standing (for several days) further minute quantities of iodine are separated, but at no time is there such a decided interval as at the end of the first two minutes. Within certain limits the quantity of separated iodine is proportional to the quantity of morphine present, provided care is taken that the free iodine is at once removed from the morphine solution by shaking with carbon disulphide. The latter is thereby colored so decidedly that an increase in dissolved iodine of only $\frac{1}{20}$ can still be very clearly recognized, which is best done by comparing solutions of iodine separated by 0.001 to 0.02 gm. of morphine. The color is *not* affected (contrary to Stein) by pure acetic acid and small quantities of alcohol, nor by sugar, nitric, phosphoric, and sulphuric acid. Gum and tannin prevent the separation of the carbon disulphide and also its coloration. Hydrochloric acid in small quantity is without influence; in larger quantity it can totally prevent the coloration of the disulphide, the latter after being colored may even be rendered colorless by shaking with the acid. After shaking with sufficient acetate of sodium, the original color of the disulphide may be restored. Narcotin has little influence upon iodic acid. If too large a quantity of an acetate is added it prevents the coloration of the disulphide by combining with the iodic acid. Ammonium salts with stronger acids act indifferently. After shaking three minutes all iodine has not yet passed into the disulphide, and the supernatant aqueous liquid has a brown color. But the quantity of iodine remaining in the latter is so small that it can scarcely tinge fresh disulphide of carbon. After about twelve hours it becomes almost entirely colorless, separating a minute quantity of iodine which renders 5 cc. bisulphide only very faintly rose-colored.

An extract of opium, treated with iodic acid and then shaken with disulphide of carbon, yields to the latter so much the less iodine, the greater an interval of time has elapsed between the addition of the iodic acid and the shaking. Dilute solutions refuse to impart a coloration already after five minutes. But if several liquids —other conditions being equal—are shaken immediately, the coloration is exactly alike, and but very slightly different from that produced, under the same circumstances, with a solution of pure morphine of known strength. The reabsorption of the liberated iodine in the opium extract is much diminished if the extract is of such a condition that it does not form an emulsion with the disulphide, but separates rapidly. If the disulphide is added previous to the addition of iodic acid, the loss of iodine is very small, at all events not larger than the loss of morphine in Flückiger's process of assay.* To bring the morphine or opium solutions to the proper condition it has been found best to precipitate them with basic acetate of lead and to remove the lead from the filtrate by excess of sulphuric acid.

Colorimetric Method of Opium Assay.—The assay, based upon the facts previously recorded, is thus described by Dr. Mylius: 0.5 gm. of powdered opium are boiled with about 10 gm. of water in a 50 cc. flask, mixed with 3 gm. of basic acetate of lead, then filled up to the 50 cc. mark with cold water. After shaking and, if necessary, further cooling, the contents of the flask are filtered, and either the whole filtrate precipitated with 15 drops of concentrated sulphuric acid or an aliquot portion of it by a corresponding amount of acid.† The liquid is then again filtered, taking particular care to obtain it absolutely clear. For comparison with this opium extract a standard solution is prepared, containing 0.1 gm. of morphine with 3 gm. of dilute sulphuric acid in 100 cc. of water. The iodic acid is best employed in form of a solution in an equal weight of water.‡

The most suitable apparatus for carrying out the assay has been found to be a simple tube, closed at one end, about 16 centimeters long and 1.5 cm. bore, which is either completely divided, up to 20 cc., into $\frac{1}{2}$ cc., or which may, for practical purposes, have divisions only at 5, 10 and 15 cc., but from this mark up to 20 cc. should be divided into $\frac{1}{2}$ cc. At least two of these tubes are necessary, but it is better to have at hand more, so as to be able to make several assays at the same time. The tubes, when in use, are placed into a test-tube rack, and particular care must be used to have them thoroughly clean. The further steps of the process are as follows:

Into two of these tubes, provided with corks, 5 drops each of the concentrated solution of iodic acid (or 0.08 to 0.10 gm. of iodate of potassium with 2 drops of concentrated sul-

* See *Report on the Rev. of the U. S. Pharm.* (Amer. Pharm. Assoc.), by Ch. Rice, N. Y., 1880, p. 103.

† The small amount of acid does not materially alter the bulk. 20 drops only measure 0.5 cc., and the subsequent lead precipitate again diminishes this bulk. It may be safely assumed that 10 cc. of the last filtrate represent 0.1 gm. of powdered opium.

‡ It is not absolutely necessary that the iodic acid should be free from nitric acid. The author also recommends that inspectors of pharmacies, who carry their reagents about with them, should use iodate of potassium, which may be easily preserved and can be thrown into the disulphide of carbon in a solid form, but in this case the quantity of sulphuric acid should be increased.

phuric acid) are introduced, then 5 cc. of rectified disulphide of carbon, and finally 10 cc. of the pure morphine solution into one tube and 10 cc. of the prepared opium extract into the other. Since the iodic acid is at first separated from the morphine solution by the disulphide of carbon, no action takes place. The corks having been inserted, the tubes are now briskly shaken —by the watch—and holding one tube in each hand, for 2 to 3 minutes if iodic acid was employed, and for 3 to 4 minutes if iodate was used. The tubes are then replaced in the rack and the disulphide allowed to separate. In the tube containing the pure morphine solution this takes place within ½ minute; in the other tube, if properly prepared, in 2–3 minutes. After the disulphide is separated, the color of the two columns is compared, which may be done at once, but is better judged of after about 10 minutes, when the solutions have become entirely transparent. If both tints are alike, the opium under examination contains 10% of morphine. If they differ, more disulphide is added to the tube containing the darker tint—after having made sure that it still contains 15 cc. of liquid—until the tints are alike. By reading off the new level—which ought to be done at the top of the aqueous layer—the amount of added disulphide is ascertained. We then find the percentage of opium by the following equation:

$$(I.)\quad 5 : 5+y = 10 : x$$

where y denotes the volume of the added disulphide, and x the percentage of morphine in the opium. The result becomes less accurate if some of the pure morphine solution is poured into the tube containing the fainter colored liquid, until the tint has been darkened to the same shade as the other. In this case the proportion is:

$$(II.)\quad 10 : 10+y = 10 : x$$

where y denotes the added morphine solution and x the percentage of morphine. In both cases it is supposed that the opium contains more than 10% of morphine. If it contains less than 10%, the second member of each of the above two proportions would have to be reversed, viz. x : 10, instead of 10 to x [or the proportions could be written:

$$(Ia)\quad 5+y : 5 = 10 : x$$
$$(IIa)\quad 10+y : 10 = 10 : x]$$

The above process yields results which agree with those of Flückiger, but which may vary by ± 5%. It is not distinguished by very great exactness, but is highly advantageous, for all practical purposes, by the rapidity of execution and the small amount of consumed material. While Flückiger's process requires 24 hours and 4 gm. of opium, the above method—if the normal solution of morphine is at hand—only requires 0.2 gm. of opium and about 20 minutes. The first filtration consumes the greatest amount of time.

If it is desired to be still more exact, a normal solution of opium may be prepared as above directed, to be brought to such a strength that it contains exactly 0.1 gm. of morphine in 100 cc., tested by Flückiger's method. This is then to be used in place of the morphine solution, and thereby the small error, caused by the tendency of solution of opium to absorb iodine, neutralized.

Application of this Process to Tinctures of Opium.—In the tinctures of opium the same process is applicable. It is only necessary to take 5 gm. of the tincture, and to observe otherwise the same proportions as before. The alcohol does not interfere with the reaction. The correctness of the method is shown by the fact that a 10% tincture of opium, made from opium which contained 10% of morphine according to the before described process, was found to contain 1% of morphine by the same process.

Determination of minute Quantities of Morphine and Opium.—In mixtures the same process may be employed. A powder was examined, for instance, consisting of 0.35 gm. of sugar and 0.035 gm. of opium—the latter containing 9.5% of morphine. It was boiled with water, treated with 10 drops of basic acetate of lead and made up to 10 cc. with water, the liquid filtered, precipitated with 4 drops of sulphuric acid and again filtered, when 9 cc. of filtrate were obtained, which were again brought to cc. by the addition of water. These were shaken with 5 cc. of disulphide of carbon and 3 drops of solution of iodic acid. In another tube, 5 cc. of disulphide, 3 drops of iodic acid, and 10 cc. of water were shaken with successive quantities of the normal morphine solution (1 : 1,000) until both tints were alike. There were consumed 2.7 cc. of the morphine solution, corresponding to 0.0027 gm. of morphine. Consequently the powder contained 0.003 gm. of the alkaloid.

$$9 : 10 = 0.0027 : x \text{ ; and } x = 0.003$$

Since the opium itself, assayed by Flückiger's method, contained 9.5% of morphine, the 0.003 gm. correspond to $\frac{100 \times 0.003}{9.5} = 0.0315$ gm. of opium, instead of to 0.035. Operating in this manner, by the gradual addition of morphine solution, there is always a trifle less morphine found than is actually present. The possible error may be seen from the following table. Column I. gives the quantity of morphine corresponding to the actually used volume of the standard morphine solution and to the coloration of the disulphide, if shaken *immediately;* while column II. gives the quantity of morphine found by the addition of the same volume of standard solution, if the latter is added *gradually* to the iodic acid and disulphide:

I.	II.
0.0010 gm. morphine.	0.0015 gm. morphine.
0.0030 " "	0.0035 " "
0.0060 " "	0.0070 " "
0.0080 " "	0.0090 " "

It is safer, therefore, after having ascertained by an approximate assay the probable quantity of standard morphine solution required, to repeat the test so that this quantity is added at once and immediately shaken with the disulphide. It may then be diluted with more disulphide, and the quantity of opium or morphine determined by calculation, as detailed above.

RECENT PAPERS.

Semi-Annual Trade Report on Drugs and Chemicals.

(Abstract from the "Handelsbericht" for April, 1881, of Gehe & Co., Dresden.)

Aconitine.—Gehe & Co. expressly state that they never supply any other but the German preparation (Pharm. Germ.), when "aconitine" is ordered. The French, prepared according to the process of Hottot and Liégois and Morson's English aconitine or napelline are only furnished when particularly specified.

Aloes.—Cape A. has been somewhat more abundant; nevertheless, the price has again advanced to 46 and 47 *sh.*, owing to the disturbed condition of the South African provinces.

Curaçoa A. is only a shade higher than the former and is expected to become an acceptable substitute for it, as soon as it will become more homogeneous in quality and be delivered in more solid condition.

Angostura Bark.—The true bark, from the western coast of South America, is in frequent demand for the manufacture of Angostura bitters.

Arnica Flowers.—The non-arrival of the usual large orders from the United States has caused an accumulation of stock in the hands of speculators, which they are now compelled to get rid of at a loss.

Aspidospermine and Citrate of A.—See *Quebracho Bark.*

Benzoic Acid, artificial.—Gehe & Co. now keep in stock two varieties of urine benzoic acid, namely, one made from *cow's* urine and another from *horse's* urine. The former is much more free from urine odor than the latter, which has an ammoniacal ("horse-stable") odor. Toluol-benzoic acid is abundant in the market, and may be had at a variety of grades and prices.

Bismuth.—Metallic bismuth has maintained the same price, owing to the continuance of the coalition of the Saxonian and Bolivian producers, which will probably remain intact as long as no new mines are discovered or developed. It is difficult to obtain statistics of the annual consumption of bismuth; the only country whose import is known is France, which received, during 1879, 19,858 kilos, of which England furnished 18,260 kilos.

Borax.—The rapid advance in price, from £35 to £63 per ton, beginning in December, 1879, in England, has been maintained longer than was expected; the consumption, even at the advanced price, has been satisfactory, and Californian competition has been discouraged for the present. Refined Californian borax has already disappeared from the European market, probably because it pays better to import the crude. Hamburg imported of Californian crude borax, about 888,000 kilos in 1880, against about 440,000 kilos in 1879.

Butyl Chloral, or croton-chloral hydrate, is getting to be more in use. The price, in spite of the comparatively low raw materials, is still high; but it must be remembered that its preparation is extremely distressing to the workmen.

Cassia Cinnamon.—For years past importers have suffered losses by the importation of this article. All attempts made at Hamburg to bring the price up to a level of the cost of importation have proved futile on account of the enormous stock on hand in London, which is but slowly diminishing. Excessive imports from China, in the end of 1879 and the beginning of 1880, increased the London stocks from 59,310 cases on Jan. 1st to 131,236 cases on Aug. 1st, and although new imports from China have almost ceased at this time (during the second part of 1880 only 275 piculs were shipped to England and 1,050 piculs to the Continent), yet the market is still glutted. On March 1st, the London stock still amounted to 110,400 cases, while Hamburg has a comparatively small quantity. On the other hand, the drug has accumulated in the Chinese ports, and in spite of the reduction in price from $11.50 to $8.50 during the past year, the new incoming crop will meet large remainders from the year before. The consequence will probably be that the production will be diminished.

Cantharides.—Both Russian and Chinese blistering flies were abundant and moderate in price. New York and Boston, which in former years were considerable purchasers, appear to have a diminished demand for this drug.

Cardamoms.—Ceylon Cardamoms (see *Pharmacographia* [2], p. 647), as supplied to the market now, are said by Gehe & Co. to be by no means up to the standard.

Ceresin, etc.—The Galician ozokerite (or fossil wax) mines are suffering, not so much from a diminished demand of their product, as from an irrational and rapacious method of mining. The consumption of the last two years is estimated at the following figures:

	1879.	1880.
Austria, home consumption	3,000,000 kil.	3,250,000 kil.
Austria, exportation*	5,570,000 "	5,592,000 "
Germany	280,000 "	372,000 "
Italy	320,000 "	170,000 "
England	365,000 "	65,000 "
France	15,000 "	2,000 "
Russia	90,000 "	25,000 "
	9,640,000 kil.	9,476,000 kil.

Ceylon Cinnamon.—Ceylon reports speak of diminished production. The total export for the four months from October, 1880, to January, 1881, has been only 227,061 lbs. (of which 181,261 lbs. went to England), against 468,955 lbs., 550,374 lbs., and 591,101 lbs. for the same period of the three preceding years.

Chloroform.—Gehe & Co. give, among other information, an interesting statement regarding the quantity of ingredients used and quantity of product obtained in the course of several months' manufacture of chloroform. 67,063.50 kilos of chloride of lime and 5,608.0 kilos of 95% alcohol, gave

5164.31 kil. of Chloroform I	= 7.70%	of the chloride of lime used.
457.50 " " Chloroform II	= 0.68%	
25.32 " " Residue	= 0.038%	

Chloroform I. is that quality which does not react with sulphuric acid; chloroform II., that which colors the acid.

Chrysarobin (*Chrysophanic Acid*)—is in moderate demand and low in price. It is evident that this substance has passed the period of its probation, and is undoubtedly a reliable remedy in psoriasis.

Cinchona Bark.—It has been a matter of great surprise that, in spite of the colossal quantities of bark thrown on the market during 1880, the price of (quinine) manufacturers' bark has been steadily maintained at a high figure. Though the supply has somewhat exceeded the demand, yet the consumption was enormous, amounting to 64,291 bales, against only 53,549, 43,775, and 27,165 bales respectively

* A large portion of this is imported in the United States.—Ed. N. R.

during the three preceding years. The largely increased manufacture of sulphate of quinine in England, Germany, France, and Italy finds its explanation in the increased demand from America, which took very considerable quantities during the past year, in consequence of either insufficient, or possibly diminished production. And this demand has now begun to be regarded as a principal factor in regulating the price of quinine.

From January 1st to December 31st, 1880, the following quantities of manufacturers' bark were delivered in London. The corresponding quantities for 1879 are likewise given.

	1880.	1879.
Calisaya bark,	6,395 bales.	9,187 bales.
Colombia "	21,942 "	16,367 "
New Grenada bark,	22,283 "	14,292 "
Carthagena "	6,470 "	5,360 "
East India "	20,215 "	13,460 "
Total	77,305 bales.	58,666 bales.

The total value of *all* cinchona barks imported in London during 1880 amounted to £1,115,534, against 973,163 in 1879. France received, during 1880, 20,166 bales (against 15,994 in 1879), of manufacturers' bark. The United States, 32,800 bales (against 46,700 in 1879). According to the French commercial statistics, France imported, during 1879, 1,658,445 kilos of *all* kinds of cinchona, of which it received 681,412 from England, 675,112 directly from New Grenada, and 139,527 from Peru. 762,589 kilos were again exported, among them 432,668 kilos to Italy.

The movement of bark in the United States during the past five years has been as follows:

	Stock, Jan. 1.	Imports.	Sold.	Exports.	Rejected.
1876	11,600	32,400	35,700	500	800
1877	7,000	23,500	18,400	500	1,500
1878	10,100	44,900	35,700	900	2,900
1879	16,000	46,700	26,650	4,400	2,600
1880	29,000	32,800	34,800	6,800	8,400

The stock on hand in first hands on Dec. 31st, 1880, amounted to:

In London,	28,173 bales,	against	1,420 bales in 1879.
" Paris,	8,396 "	"	1,370 " " "
" New York,	11,800 "	"	29,000 " " " "

From this it will be seen that there was a diminution of import only in the United States; but the stock on hand has likewise been greatly diminished in proportion. All this shows that the United States have become much more extensive buyers of quinine.

Although present stocks in London are large, fresh supplies of Colombian bark, which were detained through droughts in the Magdalena River, are shortly expected. Colombia is trying to improve its means of communication, and has begun to make fresh plantations of good varieties of bark.

Cloves.—No material reduction in price may be expected this year. Hamburg imported during 1880 400,000 pounds of Zanzibar and 3,000 pounds of Amboina cloves, against a total importation of 225,000 pounds, 27,6000 pounds and 216,00 pounds during the preceding three years.

Codeine—is much more in demand than formerly.

Copaiba.—The European supply of this balsam has not been able, during the past year, to satisfy the demand. It is said that the trees yielding it are gradually disappearing, and this seems to be confirmed by the steadily decreasing annual imports at Hamburg. Maracaibo balsam is, at present, as rare as Angostura and Maranhan. Para balsam is just now entirely out of the English market. Even the East Indian copaiba-balsam (properly, gurjun oil, or wood oil), is eagerly purchased at double its former price, which circumstance may be taken as a confirmation of the rumors that it is much used as an adulterant of genuine copaiba.

A specialty, which has been used since 1874 as a remedy against gout and rheumatism, and has been known under the name of *Balsamum anarthriticum Indicum*, has lately been the subject of considerable discussion. In the *Frankfurter Zeitung* of Dec. 28th, 1880, a certain Mr. A. Kappler, of Stuttgart, pensioned official of the Colonial Government of Surinam, stated at length that the balsam sent by him to Stuttgart and Frankfurt had nothing whatever in common with gurjun-balsam, but that it was derived from the wallaba tree, *Eperua falcata* Aubl., growing at the banks of the Maroni, in the Dutch colony of Surinam, where he had lived for thirty-three years as frontier officer. The oil or balsam of this tree, obtained by incisions of the stem, is said by him to have long been known to the Europeans, Creoles and colored inhabitants of the country as an excellent remedy against gout and rheumatism, and is also sold in Holland. [This information is to be received with caution, as neither ourselves nor some of our European correspondents who have written to us on the subject have, so far, succeeded in obtaining a confirmation of these statements.—ED. N. R.]

Cubebs.—During February, it was reported from London that 737 sacks of cubebs had been returned from New York, where the drug had been used to some extent (as a cure for asthma?—ED. N. R.)—for smoking, but seems to have fallen again into disuse, in spite of extended advertising.

Ergot.—In consequence of the wet summer, the yield was plentiful, particularly in Spain. Up to November the price remained regular, but at that time urgent orders from the United States advanced the price, which could have been avoided, since the Russian crop shortly afterwards caused it to fall back to the old figures. New York and Boston imported in 1879 61,000 pounds; in 1880, 108,000 pounds.

Gamboge.—During August, 1880, the price rose from £13.10 to £20 per cwt., in consequence of urgent orders from America [the United States?].

Guarana.—This drug has ruled at a low figure. It would appear as if it were less frequently employed now, though it has formerly been a favorite remedy in migraine.

Homatropine, Hydrobromate.—After a promising entry into the materia medica of the ophthalmologist, this article is now seldom asked for. Its effects appear to be different in different individuals, for which reason most physicians have returned to atropine.

Honey.—The following quantities of honey were imported at Hamburg during 1880 and 1879:

	1880.	1879.
From Habana,	1,150,000 lbs.	800,000 lbs.
" Mexico,	1,100,000 "	1,100,000 "
" Chili & Peru,	685,000 "	1,097,000 "
" California	10,000 "	450,000 "
" South Sea Isl'ds,	20,000 "	20,000 "
" Domingo,	860,000 "	550,000 "
	3,825,000 lbs.	4,013,000 lbs.

It will be seen that the Chilean and Californian supplies were greatly below those of last year.

Insect Powder.—Dalmatian insect-powder flowers (Flores chrysanthemi) have, for some years past, thrown the Persian completely in the shade. Orders from the United States are preferably given for the former, and the price is often influenced by the demand from this country alone. After the new crop of Dalmatian flowers had been put on market—in June last—the *wild, unexpanded* mountain flowers, which are the most efficacious, could be purchased at 150 to 160 florins per cwt.; but the price soon rose again to over 200 florins. The stocks at Trieste, on March 1st, 1881, amounted to 800 kilos of wild, 12,500 kilos of half-closed and cultivated, and 32,500 kilos of expanded and cultivated flowers. The arrivals at Trieste, from June, 1880, to Feb. 28th, 1881, were 302,000 kilos; the exports, 256,000 kilos.

Jaborandi.—This has become a standard drug. Hamburg imported in 1880 11,500 kilos. The invoices sent to London and Paris consisted mostly of thin, greenish leaves, poor in pilocarpine, from the Argentine Republic

and Southern Brazil, which Gehe & Co. do not consider to be from the true *Pilocarpus pinnatus* (or *pinnatifolius*).

Kino—has become scarce. Fine Cochin-china was as high as £8 per cwt., owing to continued demand from Ameria.

Musk.—The exports from Shanghai and Canton—the only Chinese ports from which musk is shipped—amounted, in 1879, to 3,432 catties (@ 605 grams), against only 2,420 catties in 1878.

Oil of Lemon.—Adulterations have, of late years, again become quite common. The most careful examination of odor and taste—which is practically the most reliable method—is recommended when purchasing.

Oil of Peppermint.—In consequence of unfavorable weather, the peppermint crop of the United States has not been satisfactory. That the price of Hotchkiss H. G. oil did not advance more than 1 shilling per pound in London was owing to the large remaining stocks. The English crop was more satisfactory as to quality, but is being contracted in quantity, since in 1880 250 to 300 acres *less* were cultivated at Mitcham than in 1879. Gehe & Co. state that they will no longer carry in stock Cambridge oil of peppermint, as it does not offer any advantage, either in quality or price, over the Mitcham oil.

Opium—has been a difficult commercial article during the past year, chiefly because exaggerated reports regarding the bad condition of the plantations in Asia Minor aided speculation, and consequently drove prices upwards, so that good druggists' opium, containing 10% morphia, rose in Smyrna, during last spring, from 150 to 250 piasters per tcheki = 27 shill. per lb. The new crop, however, turned out to be much larger than was expected, which caused a fall in price: Yerli to 230 piasters at Smyrna; Smyrna and fine Constantinople opium to 25 shill. at London. These prices remained to about November, as there was a good demand from the United States, chiefly for Malatia and Karahissar. For opium-smoking in California there were consumed, in 1879–80, no less than 16,548 lbs. over and above that consumed in 1878–79. During December a large quantity of Persian opium of excellent quality reached London, which was absorbed by morphine manufacturers, thus causing a decline in Turkish opium in Smyrna to 210 p., in London to 22–23 sh. The New York Syndicate, composed of five partners, each with a capital of $100,000, which had already made large purchases, has been constantly engaged since then in driving the Smyrna market upwards by absorbing all opium which could be had at moderate prices. But in spite of the diminution of stock at Smyrna during March to only 400 baskets, no confidence has as yet returned to the article. So far, the prospects of the new crop are favorable. France carries on a considerable trade in opium through Greek agents at Marseilles. During 1879 it imported 51,811 kilos (45,242 of which from Turkey), and exported 46,333 kilos, 35,331 of which went to England.

Pelletierine, Tannate—is quite extensively used and evidently has a promising future before it.

Physostigmine.—The *Salicylate* is gradually displacing the sulphate, as it is much more definite and stable.

Quebracho Bark.—The eager demand for this new drug has been more than satisfied by several unexpected and large consignments from the Argentine Republic, which were brought over with an expectancy of sharing the high price of the drug previously prevailing. But the sudden arrival of the large quantity, and the uncertainty as to the future of the drug so reduced the value as to deprive the importers of the expected profit. Both the bark and its alkaloid, *aspidospermine*, are now much lower in price. Gehe & Co. have been informed that this alkaloid and also its *citrate* (which is a better and more economical form) could be furnished at much lower rates if the commercial bark were derived from young trees, while hitherto the bark of the old and stouter trees has been exclusively sent over. It is also hoped that transportation by water will become lower, provided the same kinds of bark can be obtained in the province of Gran-Chaco, as heretofore in Tucuman and Santiago.

Quinine, Sulphate.—The manufacture of this important salt is constantly increasing. The total annual production of the world is now estimated at ab. 122,000 kilos, distributed as follows:

Germany, 28,125 kilos.	United States, 31,500 kilos.
France, 20,250 kilos.	India, 6,125 kilos.
England, 13,500 kilos.	Italy, 22,500 kilos.

The figures given for Germany and Italy are possibly much higher, since their export to the U. S. has considerably increased during the last few years.

(Compare also above under cinchona bark, and p. 169.)

Salicylic Acid.—The French Minister for Agriculture and Commerce has issued a circular to the Prefects of Departments, directing them to forbid the sale of any article of food, solid or liquid, which contains salicylic acid or one of its derivatives. The order states that the Committee of Public Health has drawn attention to the injurious effects of the drug upon the organism, and to the fact that the drug is added for the purpose of temporarily neutralizing the action of injurious or otherwise unhealthy ingredients.

[It is probable that this order will soon be modified; for it is by no means proven that small quantities of salicylic acid, taken periodically or continually, are really detrimental to health. Some time ago the statement was made that the continued use of salicylic acid produced sterility. Possibly the French Government has fears that the country may become depopulated?—ED. N. R.]

Sodium, Benzoate.—Both that made with the natural, and that made with the artificial acid, have been in quite steady demand. It appears now that this salt will be likely to maintain its position.

Sodium, Sulphovinate.—The demand for this mild purgative has considerably increased.

Star-anise.—Several cases of poisoning by Japanese star-anise (the fruit of *Illicium religiosum*) have been reported lately. As we shall have occasion, in our next number, to return to this subject in detail, we shall content ourselves here by quoting the following chief criteria of distinction from Gehe & Co.'s pamphlet. "True star-anise consists of chestnut-brown seeds with almost closed follicles or carpels; the seeds of the false are bright brownish-yellow with widely-opened carpels; the true has a flavor very much resembling anise; the false has a feeble taste resembling laurel; on pounding in a mortar, the true emits a sweet aromatic odor, the false an odor approaching to turpentine and camphor."

Trade Report on Essential Oils.

(Original Communication, Translated from the German Manuscript.)

BY E. SACHSSE & CO. LEIPZIG.*

THE market of essential oils has of late been but little active, generally speaking, though the fear of a possible interruption of peaceful conditions, after the late occurrences at St. Petersburg, may now be said to be dissipated. Important alterations of values have not occurred.

Oil of Anise.—An active demand is arising for this oil, the principal consumption of which, as is well known, falls in the summer months. *The best quality*, distilled from *Russian* anise, *is but little used in the United States*, although it should receive better attention, in view of the present high price of *Oil of Staranise*, which is there imported in larger quantities. The latter oil, as well as

Oil of Cassia—according to the reports of our friends at Hong Kong and Macao, is but sparingly brought from the interior, and is held by the dealers at so high a figure that it may at present be purchased lower in the European market than from first hands in China.

Oil of Cajuput—has been supplied from Macassar in very large quantity. In consequence, the price has been depressed so low that our correspondents in the East are

* Agents: Messrs. Lehn & Fink, 160 William street, New York.

doubtful whether any further export would not be attended with loss.

The products of India and Ceylon, viz., *Oil of Citronella*,* *Oil of Ginger Grass*† (East Indian *Geranium*), *Oil of Lemon Grass*,‡ *Oil of Cinnamon Leaf*,§ and *Oil of true Cinnamon*, have been subjected, for several months past, to the occasionally considerable fluctuations of the Indian money value; this, in conjunction with some extra large consignments, had a depressing tendency upon the price. By means of our direct connection with Bombay, Calcutta, and Colombo, we have constantly a pure and fresh supply of these much-used oils, and are enabled to compete favorably with the higher-priced London stocks.

Sicily Oils.—Oil of Bergamot, Lemon and Orange have experienced in Messina and Calabria, since last December, a considerable reduction in price, which, however, has partly been neutralized, for foreign buyers, by the advance of Italian currency, the latter being now almost at par with gold. An advance may be certainly expected during the coming summer.

Genuine *Oil of Palmarosa* (Turkish Oil of Geranium) has become extremely scarce. The demand after this favorite perfume has been very brisk of late, and the price, already advanced by about 25%, will shortly have to be again placed at a higher figure.

Oil of Neroli and *Oil of Petit Grain* are still obtainable at very low rates, in consequence of the large yield of last season. No reliable conclusion can as yet be drawn as to next season's crop. On the other hand, other products of southern France, such as

Oil of Lavender, *Oil of Spike*, *Oil of Rosemary*, and *Oil of Thyme*, will continue at advanced figures, as the plants have suffered for several years already from frost and drought.

Oil of Cloves—one of our staple articles, suffers from the oscillations of the clove market. According to reliable reports from Zanzibar and the neighboring island of Pembi—the principal places of production of this spice—the last harvest has only yielded a medium crop. Yet the inactivity of purchasers and speculators has brought the article to a very low figure.

Oil of Patchouli.—Direct and advantageous imports of prime leaves, free from stems, enable us to furnish a superior article of oil at remarkably low figures.

Genuine *Oil of Bitter Almonds* maintains its old price.

Oil of Myrbane.—We furnish a prime article, such as should be exclusively used in soap manufacture. Unfortunately, the high duty interferes with its introduction in the United States, where the home product, which is entirely unsuited for white soaps, is had recourse to as a substitute.

Oil of Caraway—can be sold at very low figures, in consequence of an abundant harvest. This latter being a rare occurrence, it would be advantageous to purchase now.

Pure *Oil of Rose* has already become quite scarce at Kezanlyk and at Constantinople, and is likely to advance in price if the demand increases. Nothing certain is as yet known of the new crop.

The Odor of Musk disguised by Quinine.—BAGROS prepared the following pills:

℞ Quiniæ sulphatis .....0.60 gm. = grs. 10
Moschi.....0.20 gm. = grs. 3
Mucilaginis..... q. s. = q. s.
Make 6 pills.

On triturating the musk with the quinine salt, the odor of the former gradually disappeared, so that, when the pill mass was finished, the special odor of the licorice powder with which the pills were made could be recognized.—*Rép. de Pharm.* and *Arch. d. Pharm.*

Salicylate of Sodium is recommended as a remedy in dysmenorrhœa of a nervous, rheumatic, or gouty origin.

* From *Andropogon Nardus* L.—See Pharmocographia [2], 725.
† From *Andropogon Schoenanthus* L.—Ibidem, p. 725.
‡ From *Andropogon citratus* DC.—Ibid.
§ See Pharmacographia [2], 527.

Capacity of Spoons.—DR. ED. J. FOSTER, of Charlestown, Mass., sends to the *Boston Med. and Surg. Jour.* the results of a series of observations upon the capacity of spoons in common use. He was led to this by a statement made a few weeks before in a society meeting—that about eighty drops was the capacity of a tea spoon, while another gentleman said that many people believe that twenty drops and a teaspoonful are equivalents. In the following tables the usual amount is to be understood as being as much as would ordinarily be taken up, so that the spoon would be full, but yet can be moved about without spilling its contents. The "greatest amount" is as much as could *possibly* be poured in. The degree of discrepancy is to be accounted for by the differences in the shape or flare of the spoons. The liquid measured was water drawn directly from a faucet. In each case the spoons used were such as were found in four different dwellings.

Teaspoons.

	Usual Amount.	Greatest Amount.
1	50 minims.	90 minims.
2	55 "	70 "
3	60 "	90 "
4	60 "	90 "
5	60 "	140 "
6	65 "	80 "
7	75 "	110 "
8	80 "	100 "
9	80 "	100 "
10	80 "	100 "
11	80 "	110 "
12	80 "	115 "
13	80 "	120 "
14	85 "	110 "
15	90 "	120 "
16	90 "	120 "
17	90 "	130 "
18	95 "	120 "
19	110 "	145 "
20	125 "	140 "

Average, 79½ minims.

Dessertspoons.

	Usual Amount.	Greatest Amount.
1	2 dr. 0 minims.	2 dr. 70 minims.
2	2 " 0 "	3 " 0 "
3	2 " 10 "	3 " 55 "
4	2 " 10 "	2 " 55 "
5	2 " 20 "	2 " 30 "
6	2 " 35 "	3 " 0 "

Tablespoons.

1	2 dr. 35 minims.	4 dr. 30 minims.
2	2 " 35 "	4 " 45 "
3	2 " 50 "	4 " 40 "
4	3 " 20 "	3 " 50 "
5	3 " 35 "	5 "
6	3 " 50 "	4 " 45 "
7	4 "	4 " 45 "
8	4 "	4 " 50 "
9	4 "	4 " 55 "
10	4 "	4 " 55 "
11	4 "	5 " 20 "
12	4 " 10 "	4 " 50 "
13	4 " 15 "	4 " 70 "
14	4 " 25 "	4 " 60 "
15	4 " 50 "	6 "

Liquid Carbonic Acid in Commerce.—We learn from a communication of de Haen's Chemical Works, in List vor Hanover, to the *Chemiker Zeitung*, that they manufacture, for some time past, liquid carbonic acid gas and sell it in cylinders, tested to 100 atmospheres (1,500 pounds to square inch), of a capacity of about ten liters, at *mark* 1.50 (= 36 cents) per liter. At present the railroad authorities are deliberating whether it would be safe for them to carry such packages, but it is hoped that a favorable decision will be rendered. If so, it will not be long before the liquid acid will be used in the soda-water trade. —*Pharm. Centralh.*

Useful Tables.—(*Continued from last volume.*)

TABLE X.—*For converting troy ounces into grams.*

Troy Ounces.	0.	1.	2.	3.	4.	5.	6.	7.	8.	9.
0	0.	31.10	62.21	93.31	124.42	155.52	186.62	217.73	248.83	279.93
10.....	311.04	342.14	373.25	404.35	435.45	466.56	497.66	528.76	559.87	590.97
20.....	622.08	653.18	684.28	715.39	746.49	777.59	808.70	839.80	870.91	902.01
30.....	933.11	964.22	995.32	1026.43	1057.53	1089.63	1119.74	1150.84	1181.94	1213.05
40.....	1244.15	1275.26	1306.36	1337.46	1368.57	1399.67	1430.77	1461.88	1492.98	1524.09
50	1555.19	1586.29	1617.40	1648.50	1679.66	1710.71	1741.81	1772.92	1804.02	1835.12
60.....	1866.23	1897.33	1928.44	1959.54	1990.64	2021.75	2052.85	2083.95	2115.06	2146.16
70.....	2177.28	2208.37	2239.47	2270.58	2301.68	2332.78	2363.89	2394.99	2426.10	2457.20
80	2488.30	2519.41	2550.51	2581 62	2612.72	2643.82	2674.93	2706.03	2737.13	2768.24
90.....	2799.34	2830.45	2861.55	2892.65	2923.76	2954.86	2985.36	3017.07	3048.17	3079.28

TABLE XI.—*For converting grams into grains.*

Grams.	0.	1.	2.	3.	4.	5.	6.	7.	8.	9.
0.....	0.	15.43	30.86	46.30	61.73	77.16	92.59	108.03	123.46	138.89
10.....	154.32	169.75	185.19	200.62	216.05	231.48	246.92	262.35	277.78	293.21
20.....	308.64	324.08	339.51	354.94	370.37	385.81	401.24	416.67	432.10	447.53
30.....	462.97	478.40	493.81	509.20	524.69	540.13	555.56	570.99	586.42	601.86
40.....	617.29	632.72	648.15	663.58	679.02	694.45	709.88	725.31	740.75	756.18
50.....	771.61	787.04	802.47	817.91	833.34	848.77	864.20	879.64	895.07	910.50
60	925.93	941.36	956.80	972.23	987.66	1003.09	1018.53	1033.96	1049.39	1064.82
70.....	1080.25	1095.60	1111.12	1126.55	1141.98	1157.42	1172.85	1188.28	1203.71	1219.14
80	1234.58	1250.01	1265.44	1280.87	1296.30	1311.74	1327.17	1342.60	1358.03	1373.47
90.....	1388.90	1404.33	1419.76	1435.19	1450.63	1466.06	1481.49	1496.92	1512.36	1527.79

TABLE XII.—*For converting grains into grams.*

Grains.	0.	1.	2.	3.	4.	5.	6.	7.	8.	9.
0	0.	0.0648	0.1296	0.1944	0.2592	0.3240	0.3888	0.4536	0.5184	0.5832
10.....	0.6480	0.7128	0.7776	0.8424	0.9072	0.9720	1.0368	1.1016	1.1664	1.2312
20.....	1.2960	1.3608	1.4256	1.4904	1.5552	1.6200	1.6848	1.7496	1.8144	1.8792
30.....	1.9440	2.0088	2.0736	2.1384	2.2032	2.2680	2.3328	2.3976	2.4624	2.5272
40.....	2.5920	2.6568	2.7216	2.7864	2.8512	2.9160	2.9808	3.0456	3.1104	3.1752
50.....	3.2400	3.3048	3.3696	3.4344	3.4992	3.5640	3.6288	3.6936	3.7584	3.8232
60	3.8880	3.9528	4.0176	4.0824	4.1472	4.2120	4.2768	4.3416	4.4064	4.4712
70.....	4.5360	4.6008	4.6656	4.7304	4.7952	4.8600	4.9248	4.9896	5.0544	5.1192
80.....	5.1840	5.2488	5.3136	5.3784	5.4432	5.5080	5.5728	5.6376	5.7024	5.7672
90.....	5.8320	5.8968	5.9616	6.0264	6.0912	6.1560	6.2208	6.2856	6.3504	6.4152

—Calculated by Prof. H. A. NEWTON, *Smithson. Rep.*, 1865.

Note.—These tables, and those which have been given in preceding numbers of this Journal (1880, p. 244; 1881, pp. 22, 59), are of course applicable to converting quantities exceeding those given in the heading of the columns. For instance, supposing 196 grains are to be converted into grams. According to table XII., 10 grains are = 0.6480 grams; hence 100 grains are = 6.480 grams. And 96 grains are = 6.2208 gm. Hence 196 grains = 6.480 + 6.2208 gm. or 12.7008 gm.

Salicylic Acid for Bee-Stings.—Although salicylic acid, from having been too highly extolled, has fallen somewhat into disfavor, there can be no doubt that it is useful in the case of bee-stings. An Austrian paper recommends the following treatment: First to remove the sting as quickly as possible with a forceps or by scratching with a finger, but never between the thumb and fore-finger, because this squeezes more of the poison into the wound. Next squeeze the wound until a drop of blood comes out, and rub the place, as large as a dollar, with an aqueous or dilute alcoholic solution of salicylic acid. The effect is still better by injecting the salicylic acid into the wound with the hypodermic syringe. After this the spot is painted with collodion to keep out the air. A sting treated thus causes little or no pain, slight inflammation and swelling, and is not followed by nettle fever or lameness in the most sensitive and nervous individuals.—*Scient. Amer.*

How to Administer Solution of Chloride of Iron. (DR. H. HAGER).—A physician inquired how he could best administer solution of chloride of iron in liquid form, so as to disguise its taste. Dr. Hager suggested the method below given, in which, however, the chloride is converted into a compound of ferric iron with protein bodies. This is not objectionable, since the chloride, when taken into the stomach, is converted into such a compound there; and it is supposed to make no difference, whether this compound is formed immediately before being taken in the stomach, or afterwards.

The best way of taking the solution is to dilute it with glycerin or syrup, then to mix, just before taking it, with cow's milk. In this form, it neither injures the teeth, nor has it the usual iron taste. Another method would be to mix dialyzed iron and milk.—*Pharm. Centralh.*, 1880, No. 46.

On Ferric Sulphates.—(SPENCER UMFREVILLE PICKERING.) The author has examined basic ferric sulphate with a view to ascertain whether the various basic sulphates heretofore announced by observers had any claim to be recognized as definite salts. We have not space to describe in detail his elaborate and minute experiments, in which nothing was overlooked which would have yielded positive proofs of the existence of these bodies, if they had been definite compounds. But in every case, except *one*, only negative results were obtained.

There are 15 ferric sulphates, besides the normal salt, so far recorded in chemical literature, namely:

1. $Fe_2O_3.7SO_3$
2. $2Fe_2O_3.7SO_3$
3. $2Fe_2O_3.5SO_3$
4. $3Fe_2O_3.7SO_3$
5. $Fe_2O_3.2SO_3$
6. $3Fe_2O_3.5SO_3$
7. $2Fe_2O_3.3SO_3$
8. $3Fe_2O_3.4SO_3$
9. $Fe_2O_3.SO_3$
10. $4Fe_2O_3.3SO_3$
11. $2Fe_2O_3.SO_3$
12. $3Fe_2O_3.SO_3$
13. $4Fe_2O_3.SO_3$
14. $6Fe_2O_3.SO_3$
15. $7Fe_2O_3.SO_3$

The percentage of ferric oxide contained in these bodies varies between 22.22 and 93.33.

The author finds that the only basic salt of definite and constant composition is No. 11: $2Fe_2O_3.SO_3$. As a starting point, the author prepared a large quantity of the normal ferric salt, $Fe_2O_3.3SO_3$, as follows:

Ferrous sulphate is oxidized in the usual manner by means of nitric acid; the ferric salt thus obtained, after being dried and powdered, is heated in an iron dish, in small quantities at a time, until it assumes a light-brown color while hot, becoming pink on cooling, which pink color is due to the presence of free ferric oxide. And, in order that the product may be obtained in form of an impalpable powder and easily dissolved by water, the dry powdered salt, still containing a small excess of sulphuric acid, should be heated as suddenly as possible to a temperature little short of redness, whereby the excess of sulphuric acid is driven off, and a portion of the remaining salt is decomposed. The impalpable powder thus obtained is mixed with about 4 times its weight of water, on which, if the quantities used are large, the heat developed is sufficient to effect its perfect solution; whereas, if small quantities are operated on, the heat at first evolved is quickly dissipated, and the solution does not become complete till after many days.

The 20 per cent solution thus obtained was found, after filtration, to have a density of 1.208 at 15° C., and it contained a salt corresponding exactly to the formula $Fe_2O_3.3SO_3$ or $Fe_2(SO_4)_3$, being therefore the normal ferric sulphate.

By following the processes suggested by other experimenters, and by using every possible modification which could be thought of, and carefully analyzing the resulting products, the author invariably obtained a basic salt of uniform composition, and answering to the composition $2Fe_2O_3.SO_3$—*Journ. of Chem. Soc.*, Dec., 1880, 807.

On the Fraudulent Practices of Sicilian Dealers in Essential Oils of Lemon, Orange, and Bergamot.—According to reliable information, a great scramble for competition, and the establishment of many new dealers in Messina, has recently brought it about that oil of lemon, for instance, is now offered by the majority of firms at from $3.48 to $3.72 per kilo (with three months' credit), while, on the other hand, it has been ascertained, as a matter of fact, that the Calabrian and Sicilian producers do not part with their *pure* product under $4.44 to $4.68 per kilo, *cash*. Hence the Messina dealers would have to be supposed to sell with a loss of at least twenty-five per cent, if there were not such an article as oil of turpentiue and similar adulterants.

Competition among the Messina dealers has gradually infected foreign dealers likewise, though the report states that comparatively little of the inferior oils has gone to England, France, or America. The larger portion seems to have gone to Germany and Eastern Europe. A prominent firm of Leipzig (Heine & Co.) has made the experience that a whole number of Messina firms, which had flooded them with letters, agents, and travellers, and had given a solemn assurance that, in spite of the low prices, they furnished only pure essences, were all of them engaged in these fraudulent practices.

The same firm states that they had for a long time been searching for a reliable general method to detect these adulterations, but without success. The test of complete solubility in ninety per cent alcohol is only applicable in the case of oil of bergamot, and even here is subject to drawbacks. To take the specific gravity or boiling point is not sufficiently reliable, and consumes time. The nitroprusside copper test will show the presence of oil of turpentine, but no other contamination; and, while it is perhaps possible to combine a number of processes and reactions to detect *all* adulterations, it is important to possess a *rapid, practical* test. This is the test by odor, which is best performed by dropping a few drops each, of an essence of known purity and of the suspected essence, upon separate pieces of blotting-paper, and, after having inhaled the odor of the pure, to inhale that of the other. It will thus be generally easy to distinguish a bad quality from a good one, and, with a little experience, to even recognize the adulterant.

Method of determining the Freshness of Eggs.—At a recent session of the Society of Natural History of Dorpat, Prof. G. Dragendorff * gave an account of a series of experiments made by one of the pharmaceutical students, Mr. Leppig, to determine the freshness or age of eggs, with a view to discover a ready method of determining their value and fitness for food. Experience has shown that eggs, on long keeping, lose water by evaporation, and absorb air from the surrounding atmosphere, whereby the albuminous bodies are gradually decomposed. It seemed, therefore, possible to arrive at some reliable criterion, if it could be shown that the specific gravity of normal fresh eggs was tolerably uniform, and that they underwent uniform alterations in proportional intervals of time. Fresh eggs, one hour after being laid, were found to have a spec. grav. of 1.087 on an average, the maximum being 1.0942, the minimum 1.0784. These eggs lost, during the first seven days, about 0.00252 spec. gr. per day; on the last day, therefore, they had a spec. gr. of 1.073 (mean of 1.0770 and 1.0623). On the 14th day, the spec. gr. was, in the mean, 1.0575; on the 21st day, 1.0473; on the 28th or 30th day, 1.0318.

Perfectly fresh eggs, therefore, may be required to have a spec. grav. of at least 1.0784, or, in round numbers, 1.08. This is best determined by preparing a solution of common salt of this spec. grav., in which the eggs must either remain immersed in suspension or sink to the bottom. Good eggs for cooking should not be over one week old, and should correspond to a spec. grav. of 1.06. Eggs which refuse to sink in a solution of common salt of spec. gr. 1.05 should not be purchased, if possible, though they are not necessarily bad or injurious. But, whenever the spec. gr. falls to 1.025 and below, they should be considered as unfit for use and rejected.

The active Principles in Nerium odorum.—At a session of the same Society (see preceding paper), Mr. Greenish communicated the results of his examination of the bark of the stem and root of *Nerium odorum* Willd. [East Indian sweet-scented Oleander; the root-bark of which has been used externally in some skin-diseases. ED. N. R.] It belongs to the nat. fam. Apocynaceæ, which has several members containing cardiac poisons. Mr. Greenish has isolated two very bitter proximate principles, one of which, soluble in chloroform, he has named *neriodorin*, the other, soluable in water, *neriodoreïn*. Both of them appear to be glucosides, and, as experiments have shown, powerful cardiac poisons.

* To whom we are indebted for a record of the transactions—ED. N. R.

Hydrastis.—The Hydrastis canadensis, or golden seal is a somewhat rare native of the rich, shady woods of North America. The rhizome, with its adherent rootlets, is the part which has been used in medicine since the time of the discovery of America. The tincture is the preparation commonly employed in doses of 3 ss.–3 i., or more. Hydrastis is a stomachic tonic, and is often used in the treatment of atonic dyspepsia. It is one of the best remedies for the gastric catarrh of chronic alcoholism, and probably the best substitute for alcoholic stimulants, when their use has been abandoned. For habitual constipation, depending on inaction of the liver, it is, undoubtedly, a valuable remedy. The tincture should be given in half-drachm doses in an ounce of water four times a day. It makes a nasty, unsightly mixture, but it is efficacious. For piles, both external and internal, it is most useful; and it is of especial value in bleeding piles, or where there is a discharge of mucus or muco-purulent matter from the rectum. In addition to the internal administration of the tincture, a weak infusion of the root may be injected into the bowel night and morning, or may be applied externally on lint. In prolapse of the rectum in children, in fissure of the anus, and in ulceration of the rectal mucous membrane, it is highly praised. In gonorrhœa it is a most useful remedy. Bartholow recommends a drachm of hydrastia (the alkaloid) to four ounces of mucilage of acacia, and has found no injection so uniformly successful. Phillips prefers an injection made by adding one or two drachms of the tincture to a pint of water, and of this orders a syringeful to be injected up the urethra every half-hour for seven or eight hours, and then every six or eight hours for two or three days. In cracks and fissures of the nipple hydrastis has been strongly recommended, and it is said to be a good application in stomatitis, otorrhœa, ozæna, conjunctivitis, leucorrhœa, and other chronic inflammations of the mucous membranes. It was formerly used by the Cherokees as a remedy for cancer, but there is no evidence to show that it exerts any influence over this disease. Phillips says that, although glandular swellings frequently yield to its action, he has never perceived any advantages to result from its employment in true malignant disease. When, however, the general system is debilitated, this medicine operates in a remarkably efficacious manner, its action being not unlike that of quinine. The resin of hydrastis may be given in all cases where there is inaction of the liver. One or two pills, each of three grains, may be administered every night at bedtime, or one may be taken three times a day. It should be borne in mind that, although this substance acts powerfully on the liver, it has little, if any, action on the intestine, and it is, consequently, desirable to give a mild purgative to carry off the increased bile secretion. The pills, if taken at bedtime, should be followed in the morning by a teaspoonful or more of effervescing sulphate of soda in half a tumblerful of lukewarm water.—*Lancet and Clinic*, from *Br. Med. Journ.*

Does Calomel ever change to Corrosive Sublimate in Medicinal Mixtures?—This much-discussed question has been the subject of the prize-query of the Meurer-Fund (Germany) for the year 1879–80. A translation of the query is the following:

"On the changes which calomel undergoes after some time, if it has been triturated with sugar, milk-sugar, gum-arabic, powdered licorice root, powd. marshmallow root or powd. aloes, or if it has been made into pills with the same substances."

The prize for the best solution was awarded to Paul Merres, apprentice of Mr. O. Schade in Sommerfeld. The results were *all negative*, and were confirmed by control analyses of mixtures containing $\frac{1}{2000}$ of mercuric salt, in which latter, both hydrosulphuric acid and copper, still distinctly proved the presence of mercury, while they failed to do so in the former.

[We believe that the conditions of simple admixture, given in the query, have, on investigation, almost always been found to be without influence upon calomel. There are, however, other galenical mixtures, prepared by more energetic means, or containing more energetic ingredients, which have repeatedly been found to change at least traces of calomel into corrosive sublimate, or produced some other reaction resulting in deleterious compounds. Compare f. i. the paper by Fred. M. Corwin, in NEW REM., 1877, 211.—ED. N. R.]

Dr. Geissler, in *Pharmac. Centralh.*, No. 16, says in reference to the results obtained by Paul Merres: "While the question required the detection of the *alterations* which calomel could undergo, the author of the successful paper seems to have supposed that these alterations could be nothing else but *bichloride* of mercury. Hager has already pointed out (*Pharm. Centralh.*, 1867, No. 31, and 1879, No. 33) that this is not the case, and devotes to this subject a detailed discussion in the supplement to his "Pharmaceutische Praxis."* Calomel, namely, often contains an *amido-chloride* which is insoluble both in alcohol and in water. Such compounds are frequenty present in calomel from the very beginning, and are probably caused chiefly by contact of the calomel with ammoniacal vapor or solution. Calomel thus contaminated must be macerated with 10% acetic acid.

This decomposition of calomel is facilitated by the almost constant presence, in the atmosphere of pharmaceutical establishments, of traces of vapor of ammonia, hydrochloric, acetic, and carbonic acids, chlorine, bromine, iodine, and also ozone and hydrogen peroxide, which substances may be absorbed by powdered sugar (often containing saccharate of lime and chloride of sodium in presence of organic acids), and may, thereby, contribute to the minute alteration of the calomel. It cannot be denied that, under certain favorable circumstances (pure sugar, exclusion of air, etc.), calomel will remain entirely unaltered. But there is no possible way of foretelling the consequences; hence it is by far safer not to keep on hand mixtures containing calomel.

Hyoscine and the Mydriatic Alkaloids of the Solanaceæ.—Prof. A. LADENBURG, of Kiel, whose researches on the constitution of atropine, hyoscyamine, duboisine, etc., have repeatedly been mentioned in this journal, has separated a new alkaloid, existing alongside of hyoscyamine, from Hyoscyamus. Its existence had already been maintained by Buchheim, but it had never been obtained in any other than an amorphous form, and was usually called "amorphous hyoscyamine." It remains behind in the mother-water after the crystallization of hyoscyamine. This new alkaloid, *hyoscine*, differs from the other solanaceous alkaloids in this, that on splitting it into secondary base and acid, it yields a base differing from tropine, which latter is obtained by splitting the other alkaloids. The acid, however, formed at the same time, is identical with tropic acid, also obtained from the others.

The family of Solanaceæ contains, therefore, the following isomeric alkaloids, all of them possessed of mydriatic powers:

I. Splitting, by heating with caustic baryta, into *tropic acid*, $C_9H_{10}O_3$, and *tropine*, $C_8H_{15}NO$.

1. *Atropine*, $C_{17}H_{23}N_3O$, Occurs in Atropa Belladonna, Datura Stramonium } Identical with "Daturine."
2. *Hyoscyamine*, $C_{17}H_{23}NO_3$, Occurs in Atropa Belladonna, Datura Stramonium, Hyoscyamus niger, Duboisia myoporoides } Identical with "Duboisine."

II. Splitting, by heating with caustic baryta, into *tropic acid*, $C_9H_{10}O_3$, and *pseudo-tropine*, $C_8HN_{15}O$.

3. *Hyoscine*, $C_{17}H_{23}NO_3$, Occurs in Hyoscyamus niger.—*Annal. d. Chem.*, 206, 274–307.

* *Handbuch der Pharmaceutischen Praxis*, von Dr. Hermann Hager. *Ergänzungsband*, p. 537.

Identification of true Quebracho Bark.—GEORGE FRAUDE communicates the following method for recognizing true Quebracho bark (from *Aspidosperma Quebracho*). Boil 5 gm. of the finely cut bark with about 25 cc. of coal-tar benzin of very low boiling point, for about 5 minutes, filter hot, and shake the scarcely colored filtrate with about 10 cc. of dilute sulphuric acid. The aqueous solution, containing sulphate of aspidospermine, after being separated from the benzin, is treated with ammonia in excess, and shaken with 10 cc. of ether. The ethereal solution is evaporated in a test-tube and the residue boiled with perchloric acid. In case the latter is not at hand, a little water and 3 or 4 drops of sulphuric acid are added to the residue, then a *very* minute quantity of chlorate of potassium, and the whole boiled. In either case a handsome intense fuchsine-like coloration, will ensue, which is characteristic of the alkaloid (aspidospermine) contained in the bark.—*Ber. d. Deutsch. Chem. Ges.*, 1881, 319.

Preparation of a clear Solution of Caoutchouc.—DR. EDER and V. TÓTH give the following directions: Inclose 30 grams of finely cut caoutchouc in a capacious linen bag, and suspend this within a flask containing 1 liter of benzin, by means of a thread held fast by the stopper so that the bag remains near the surface of the liquid. In the course of 6 or 8 days the soluble portion of the caoutchouc, about 40 to 60%, will pass into the benzin, while the contents of the bag will swell to an enormous size. The clear limpid solution, which is quite viscous and contains 1.2 to 1.5% of caoutchouc, is then carefully separated. The swelled contents of the bag retain ¼ to ⅓ of the benzin used and may be utilized for the preparation of an inferior grade of cautchouc varnish.

The authors also state that a solution of caoutchouc in benzin, kept in half-full bottles, is decomposed on exposure to light, which may be seen by the change of the solution from a viscous to a thin-fluid condition. Even in the dark this change goes on, but it requires about three times as much time.

The Epidemic of Ergotism in Russia.—This epidemic occurred in the autumn of 1879, in the neighborhood of Novgorod. In the district attacked, an inhospitable climate and marshy soil were combined with poverty, dirt, and general unhealthy conditions among the villagers. Of nineteen cases in which the symptoms were strongly marked, four died. In other sixteen cases the symptoms were less developed, and probably as many more escaped observation. In these slighter cases the symptoms were diarrhœa (in seventy per cent), weakness, more especially in the hands and feet, occasional attacks of giddiness, headache, sleeplessness, and deadness of the fingers, with formication under the skin. All had, up to their seizure, eaten fresh-ground, unkilned rye, and the symptoms quickly disappeared under the use of laxatives and opiates, and the withdrawal of bread containing ergot. In the first-mentioned nineteen cases the symptoms were severe; racking pains in the extremities, severe headache, great thirst, and utter prostation, weakness of intellect and melancholia. Tonic and clonic spasms, preceded by dypnœa, deadness in the extremities, and cold sweats attacked the flexor muscles of the limbs, the extensors being unaffected. The respirations were 14.16; maximum temperature, 99.8°; minimum (in three cases), 95.9,° pulse slow and weak. The fatal cases, an old man and two children in one family, and a woman in another, died, three of them in a comatose condition, and one during a convulsive fit. The treatment was as above, with subcutaneous injections of morphia and inhalation of chloroform, followed by tonics and improvement of hygienic conditions. The quantity of ergot present in the rye was about seven per cent, and two dogs fed with it each showed on the seventh week a gangrenous ulcer on one paw. On the withdrawal of the ergot-bread from one dog, recovery followed in two months, while in the other, fed as before, the gangrene advanced, convulsions appeared, and death followed by way of coma in the tenth week. The post-mortem appearances were: brain and meninges, anæmic; arteries, quite empty; veins, full of dark fluid blood; heart, empty; lungs, liver, and spleen, hyperæmic; intestinal mucous membrane, congested, but neither it nor the liver showing any gangrenous spots such as have have been described. —*London Med. Record.*

CORRESPONDENCE.

WHAT MIGHT HAVE BEEN!

EDITOR OF NEW REMEDIES.

DEAR SIR:—Last evening, the daughter of a retired druggist, whose family I have known for several years, handed me the inclosed piece of paper with the handwriting of her father:

Morphium sulphur.
gr x
pro me

*****

Without further inquiry I put it up, labelled it properly with a red poison label and handed it to the lady. A few minutes afterwards she returned and asked for 10 grains of sulphate of *quinine*, saying her father made a mistake in writing *morphium* instead of *chininum!*

Imagine the consequence if I had thought, "It will do without a label, as the druggist knows what he sends for," or if he himself or his daughter had not noticed the conspicuous label before administering the supposed "quinine." I thanked God for having averted such terrible consequences from two families, and that I had strictly obeyed the law in regard to the sale of poisons.

Respectfully yours, C. K.

May 17th, 1881.

NATIONAL COLLEGE OF PHARMACY.

THE retirement of Professor O. Oldberg from the office of medical purveyor of the Marine Hospital service and his removal from Washington necessitated a recasting of the faculty of the college, which resulted in the following choice:

Professor E. T. Fristoe for the chair of General Chemistry.

Professor H. B. Parsons for the chair of Materia Medica and Botany.

Professor H. E. Kalusowski for the chair of Pharmacy.

Professor A. M. Read for the chair of Analytical Chemistry.

The officers of the college are:

President, Mr. W. G. Duckett.

Vice-Presidents, Messrs. J. R. Major and R. A. Bacon.

Secretary, Mr. Charles Becker.

Treasurer, Mr. John A. Milburn.

Additional Trustees, Messrs. Ferguson, Thompson, Kullberg, Dowling, Simms, O'Donnell, and Read.

The annual commencement had to be deferred until June, as the course in analytical chemisty does not close until the last of May. CHAS. BECKER, *Sec.*

WASHINGTON, D. C., May, 1881.

Dr. Murrill has been elected Lecturer on Materia Medica and Therapeutics at the Westminster Hospital, London, in place of Dr. C. D. F. Phillips, who has resigned.

Dr. Ferdinand Coletti, Professor of Therapeutics in the University of Padua, is deceased. The remains, by his special request, were cremated.

Dr. Canquoin, the inventor of the paste of chloride of zinc known by his name, has recently died at Dijon, in his eighty-sixth year.

BIBLIOGRAPHY.

PHARMAKOGNOSIE DES PFLANZENREICHES. Von F. A. FLUECKIGER. Zweite Auflage. Lieferung 1. 8vo, Berlin (Rudolf Gaertner), 1881. (To be published in two parts. Part 1: 6 *marks*.)

IT will certainly interest many of our friends to learn that a new edition of Prof. Flückiger's Pharmakognosie is being published. The first edition already had been generally received as a work replete with exact and reliable information, a great deal of which was based on the author's own researches and observations. In the mean time, Prof. Flueckiger has largely extended his sphere of investigations, particularly while preparing, in conjunction with his friend, Daniel Hanbury, the classic "Pharmacographia." This work has seen a second improved edition in English, and also a French translation by Lanessan, but it has never been published in German, and is therefore inaccessible to many German pharmacists. The new edition of the "Pharmakognosie" now gives Prof. Flueckiger an opportunity of incorporating into it the larger part of the contents of the Pharmacographia, with such improvements, additions and corrections as have been found necessary since the appearance of the second edition of the latter, and for this reason the work now appearing may be considered in part as a third edition of the Pharmacographia.

The subjects treated of in the work are (and will be in the succeeding parts) arranged according to simple external criteria appealing to the senses, instead of being forced into an artificial system based upon botanical or chemical distinctions.

The present part comprises

Class 1: "Vegetable Substances without organic Structure," which are thus divided:

I. *Gums:* Gum Arabic. Gum Senegal. Other kinds of gum. Tragacanth. II. *Sweet Exudations:* Sicilian Manna. Oriental Manna. III. *Resin containing Gum:* Gamboge. IV. *Resins mixed with ethereal Oil and Gum:* Myrrh. Olibanum. Asafœtida. Galbanum. Ammoniacum. V. *Resins mixed with ethereal Oil:* Common Turpentine. Venice T. Canada T. Strassburg T. "Burgundy" Pitch. Elemi. Copaiva. Gurjun-balsam. VI. *Resins:* Rosin. Sandarac. Dragon's blood. Guaiac resin. Mastic. Benzoin. VII. *Balsams* (aromatic acids, alcohols and compound ethers, mixed with resin): Liquid Storax. Balsam of Peru. B. of Tolu. VIII. *Ethereal Oils:* Camphor. Oil of Cajuput. Oil of Rose. IX. *Milky Juices:* Opium. Euphorbium. Lactucarium. X. *Extracts:* Aloes. Licorice. Kino. Catechu. Gambir.

Class 2: "Organized Substances."

XI. *Pulverulent Substances:* Starch. Lycopodium. Lupulin. Kamala. XII. *Galls.* Aleppo and Chinese Galls. XIII. *Non-pulverulent Organs of Plants:*

a. Cryptogamic: Laminaria. Irish Moss. Fungus laricis. Fungus igniarius. Ergot. Iceland Moss. Male Fern.

The first part issued is provided with a separate index, and may, therefore, be used and consulted at once. No pharmaceutical library can afford to be without this important work from the pen of the highest acknowledged authority upon the field of pharmacognosy.

BOTANICAL READY REFERENCE, Especially designed for Druggists and Physicians, Containing all of the Botanical Drugs known up to the Present Time, Giving their Medical Properties, and all of their Botanical, Common, Pharmacopœial, and German Common names. Compiled by J. M. NICKELL, Chicago, Ill., 1881, pp. 268.

THIS embraces 2,465 titles, and a copious index to the titles and synonyms. Owing to the variations in the names by which drugs are known in different parts of the country, this work will prove of valuable aid to those whose business it is to handle them. Some brief suggestions are appended respecting the gathering and preparing of "botanical" drugs for the market.

THE HYGIENE AND TREATMENT OF CATARRH. By THOMAS F. RUMBOLD, M.D. St. Louis: George F. Rumbold & Co., 1881, pp. 473, 8vo.

WE have already noticed the first part of this work. The opinions and methods of the author are, in many instances, quite peculiar to himself, and of a nature to render the book indispensable to those who make a specialty of diseases of the naso-pharyngeal passages or who wish to be familiar with the literature of the subject.

THE DIET CURE: An Essay on the Relations of Food and Drink to Health, Disease and Cure. By T. L. NICHOLS, M.D. New York: M. L. Holbrook & Co., 1881, pp. 88, 8vo, $0.50.

THIS is an attempt to prove that the vegetable diet is the natural one for human kind, and that there are many people who are better off with one meal *per diem* than with three.

NEW BOOKS.

Ronquillo. Diccionario de Materia Mercantil, Industrial y Agricola, que contiene la indicacion, descripcion y usos de todas las mercancias. 4 vols. 4to, pp. 2,645. Barcelona, 1853–1860.

Only a few copies of this most useful work are for disposal. It was published with the assistance of the Government, and is a storehouse of information on commercial substances, including drugs, which should be in every library. The original price was 100 pesetas. It may be obtained free of postage by sending a draft for 30 francs (on Paris) to Sr. D. Federico Prats Grau, 332 Calle de Valencia, Barcelona.

Gerber (Dr. Niclaus). Chemisch-physikalische Analyse der verschiedenen Milch-Arten und Kindermehle. 8vo, Bremen, 1880.

Hehner (Otto). Alcohol Tables. 8vo, London, pp. 21. *3s. 6d.*

Kolbe (Prof. Dr. H.). Ausführliches Lehr- und Handbuch der organischen Chemie. 2te umgearb. und vermehrte Aufl. von Prof. Dr. E. v. Meyer. (In 3 vols.) Vol. 1. (Also under the title: Graham-Otto's Ausführliches Lehrbuch d. Chemie, vol. 3). 8vo, Braunschweig, pp. 928. $6.30.

Miller (W. and A.). Elements of Chemistry, Theoretical and Practical. Part III.: Chemistry of Carbon Compounds, or Organic Chemistry. Sect. 1. 5th ed., 8vo, London, pp. 1068. *31s. 6d.*

Meyer (Prof. Dr. L.). Die modernen Theorien d. Chemie und ihre Bedeutung f. d. chemische Mechanik. 4te umgearb. Auflage. I. Die Atome, 8vo, Breslau, pp. 192. $1.90.

[N.B.—There is no other work in existence which expounds the modern theories of Chemistry so clearly and thoroughly as this. This new edition is partly re-written, and considerably enlarged.]

Maerker (Dr. Max). Handbuch d. Spiritus-Fabrikation. 2te Aufl. 214 illust., and 14 plates. 8vo, Berlin, *m.* 20.

Robinson (W.). Mushroom Culture: its Extension and Improvement. Illustrated, 8vo, London (*Garden* office). *1s. 6d.*

Trousseau y Reveil. Tratado completo del Arte de recetar, etc. Nueva edic. Enriquecida con un Memorandum terapéutico de *las principales Aguas minerales de España*, etc. 8vo, Madrid, pp. 432. *24r.*

Tuson (Rich. V.). A Pharmacopœia, including the Outlines of Materia Medica and Therapeutics, for Use of the Practitioners and Students of Veterinary Medicine. 3d edition. 8vo, London, pp. 354. *7s. 6d.*

NOTES, QUERIES AND ANSWERS.

Under this heading we shall, to the best of our ability, endeavor to answer such questions addressed to us, as come within the scope of this journal, provided they are accompanied by the name and address of the writer. Answers to queries received after the 5th of the month will lie over until the next issue. Unless special instructions to the contrary accompany the query, the initials of the correspondent will be quoted at the head of each answer.

When asking for the formula of an unusual, patented, or proprietary compound, always accompany the query with any information you may already possess regarding the locality in which it is used, its use and reputed effects, in order to enable us to make inquiry without waste of time and labor. When it can conveniently be done, send also a specimen of the label used on packages of the compound.

No. 885.—**Elixir of Calisaya and Iron** (W. E. B.)

The formula of this elixir given in the report by Mr. R. W. Gardner, on page 310 of our last volume, has given our correspondent some trouble. Of course the "fl. oz." following the pyrophosphate of iron should read "oz.," and from later information received by the author of the report we learn that, wherever the sign "oz." occurs, *troy*-ounces are meant. We will quote the formula as there given, and afterwards suggest a method of preparing the elixir, though it is possible to vary the manipulation in several ways:

Tincture of orange peel	fl. ℥ 1 ♏ 360
Oil of orange	♏ 65
" lemon	♏ 30
" cloves	♏ 30
" cassia	♏ 6
" nutmeg	♏ 6
Alcohol	fl. ℥ 21
Pyrophosphate of iron	℥ 2 grs. 64
Sulphate of quinia	grs. 130.
" " cinchonia	grs. 65
Phosphate of calcium	q. s.
Syrup	fl. ℥ 48
Citric acid	grs. 25
Water of ammonia	q. s.
Glycerin	fl. ℥ 1 ♏ 360
Water	q. s. to make 1 gallon.

Dissolve the tincture of lemon peel and the essential oils in 20 fl. ℥ of alcohol, and add the syrup and 20 fl. ℥ of water. (Solution *a*.)

Dissolve the citric acid and the sulphates of quinia and cinchonia in 16 fl. ℥ of hot water. (Solution *b*.)

Dissolve the pyrophosphate of iron in 10 fl. ℥ of water and add the glycerin. (Solution *c*.)

Add solution *b* to *a*, rub a small quantity of the mixture with about 2 ℥ of phosphate of calcium to a smooth milk, add this to the remainder of the mixture, mix thoroughly and filter through a well-wetted filter, returning the first portion if it should not be at once clear. Wash the filter with a mixture of 1 fl. ℥ of alcohol and 4 fl. ℥ of water. Add to the filtrate carefully, and in drops, water of ammonia, to neutralize the excess of acid, without producing a cloudiness or precipitate. Then add solution *c*, and finally enough water to make the whole measure 1 gallon.

No. 886.—**Trichlorophenol** (W. B.).

The information which we gave on p. 92 of our March number and p. 117 of our April number, may be supplemented by the following abstract of C. O. Cech's paper (in *Journ. pr. Chem.* [2], 22, 345; and *Journ. Chem. Soc.*, 1881, Abst. p. 126), from which you will see that it is dangerous to mix large quantities of chloride of lime and carbolic acid.

It has often been noticed that the addition of bleaching powder to carbolic acid in dressing wounds causes healing to take place more rapidly than when the acid is used alone. It has been shown by Dianin that phenol and bleaching powder react on one another, forming mono-, di- and tri-chlorophenol, which may be isolated and separated by treatment with a strong acid, and distillation with aqueous vapor. The author, considering that these chlorophenols are probably formed when carbolic acid and bleaching powder are used together in dressing a wound, and exert a healing power greater than that of carbolic acid alone, attempted to prepare chlorophenols in quantity by the above process; *it proved dangerous on the large scale*, and direct treatment of phenol by chlorine gas was resorted to. A red crystalline mass was obtained from which white crystals are obtainable by pressure between filter paper; after purifying these crystals by precipitation from their alcoholic solution by water, they were dissolved in alcohol, and the bandages were impregnated with this solution. These crystals consist of a mixture of three chlorophenols, in which trichlorophenol predominates, and is probably the most useful. The chlorophenols present the advantage over phenol of being less corrosive and poisonous, and trichlorophenol probably has most advantage in this respect; its value as a disinfectant remains to be decided by the use of chlorophenol bandages.

No. 887.—**Zoedone** (I. W. R.).

This is an effervescing phosphorated ferruginous water, which was invented and patented some three years ago by David Johnson, F.C.S. It is described to be a most pleasant and refreshing drink, in which the peculiar iron taste is said to be very successfully masked by a peculiar flavoring syrup which alone is kept a secret. The quantity of the active ingredients in each small champagne bottle are given by the patentee as follows (acc. to the *Chemist's Journal*):

Calcii phosphas	grs. 2½
Ferri phosphas	gr. 1
Potassii phosphas	gr. ⅛
Sodii phosphas	gr. ½

It is said to be a refreshing and invigorating beverage, but we have no personal experience with it.

No. 888.—**Tripolith** (M. D.)

This is a substance which is used as a substitute for *plaster of Paris* in surgical practice. It is a gray, very fine powder, chiefly composed of calcium and silicium, with a minute quantity of iron. Originally it was intended for use in stucco-work, for which it is said to be particularly suitable on account of its lightness and resistance to water. It is not known how it is prepared, but, according to Prof. Langenbeck of Berlin (*Berl. Klin. Wochenschr.*), it has several advantages over gypsum. It is said to absorb less moisture from the air, hence does not lose its cohesion on exposure; tripolith-bandages are lighter than plaster bandages, and harden quicker, requiring only 3 to 5 minutes, while plaster requires 10 to 15 minutes. The tripolith-bandage loses water for some time afterwards by evaporation, and though soon set, still feels damp even after 24 hours. After having hardened, a tripolith-dressing absorbs no more water, while plaster must be rendered water-proof by coating it with varnish. Tripolith is sold at 4 pfenninge per kilo (in Berlin) below the price of plaster of Paris.

No. 889.—**Glucose** (M. V. B. J.)

The manufacture of glucose has become so large and important a business that it would be utterly beyond the limits which we could afford, to give a complete description of the processes by which it is manufactured at present. Immense quantities are made in this country from Indian corn, and are put upon the market either a solid form (granular or in lumps) or in form of a syrup, which is largely used as a substitute or adulterant of true sugar-house syrup and also of honey. In general, the process of manufacture may be thus described. 400 parts of water are mixed with 4 parts of sulphuric acid,

and the mixture raised to boiling. Meanwhile 100 parts of starch (or potato flour, or corn flour, etc.) are made into a milk with water, then added to the boiling dilute acid, under constant agitation, and the whole boiled until the dextrin, which is formed at first, is completely converted into glucose, which may be recognized by the fact that 1 part of the liquid is no longer precipitated by 6 parts of absolute alcohol. Of course, a slight precipitate always occurs, which is owing to the presence of substances, chiefly derived from the starchy material, which are insoluble. The acid liquid is now mixed with lime, in whatever form it can be obtained cheapest (caustic lime, chalk, marble, etc.), the insoluble sulphate of calcium allowed to deposit, and the liquid decanted. This is now evaporated to a density of 15 or 16° Beaumé, filtered through bone-black and further concentrated in vacuum-pans either to a syrup or to the point of crystallization. If the highly concentrated mass is allowed to completely solidify to a crystalline mass, the crystals turn out to be very impure. To produce colorless or white glucose, it is necessary to arrest the concentration at a certain point, and to separate the still syrupy portion of the mass from the crystals already formed. 100 parts of starch yield about 100 parts of sugar or 150 parts of syrup.

No. 890.—**Worcestershire Sauce** (M. C. C.)

The genuine sauce has often been "imitated," yet though a few of the imitations approach it quite closely, none of them has ever equalled it in all respects. We do not know the composition of the original sauce, nor that of its imitations, and can give you only what we find quoted as the "reputed" formula:

Walnut catsup	10 gall.
Mushroom catsup	10 "
Madeira wine	5 "
White vinegar	15 "
Canton soy	4 "
Common salt	25 lbs.
Chillies, ground	2 "
Allspice powd.	1 "
Coriander powd.	1 "
Cloves	½ "
Mace	½ "
Cinnamon	½ "
Asafœtida	2 oz.
Brandy	1 gall.

Macerate the asafœtida with the brandy until its soluble parts are extracted. Mix the catsups, wine, vinegar and salt, heat them to boiling, then add the spices and brandy, cover well and let cool. Boil 20 lbs. of hog's liver for 12 hours with 10 gallons of water, renewing the water from time to time. Then take out the liver, chop it fine, mix it with water, work it through a sieve, and mix the pulp with the sauce.

No. 891.—**Potassium Bromide** (M. C. C.)

This correspondent asks: "Is there any reason to suppose that the bromide of potassium of commerce is adulterated? If so, with what, and how may it be detected?"

We have not heard of any wilfully adulterated bromide of potassium, as coming either from a manufacturer or a wholesale dealer in drugs. The price of the chemical is so low, and its appearance so characteristic, that it would, in the first place, not pay to adulterate it, and, in the second place, would at once be detected. When bromide of potassium was first introduced, and was sold at $8.00 and $6.00 per lb., several suspicious lots came under our observation, such as could be safely pronounced, by the eye alone, to be of very doubtful character; but as we had no chance of making a chemical examination at that time, we cannot state positively that they were spurious. We do not believe there is a retail pharmacist in the United States who would knowingly adulterate this chemical or sell another substance in place of it.

The commercial salt, however, is never entirely pure. This arises from the process of manufacture: 1. of the bromine, 2. of the bromide itself. Bromine is obtained by distilling the concentrated brine of salt works with manganese dioxide and sulphuric acid, whereby the accompanying chlorides are first decomposed, with liberation of the chlorine which in its turn displaces bromine from its compounds and causes the latter to pass over. (For a more detailed description, accompanied with illustration, see our vol. for 1877, p. 105). But bromine is not the only substance which finally collects in the receiver. There is always present more or less chlorine, in form of chloride of bromine, and American bromine contains considerable more than the German which is obtained principally from the Stassfurt mines; besides, there may be present iodine (as iodide of bromine.) The difficulty of depriving bromine of the last traces of chlorine and iodine makes it necessary to permit a small percentage of these impurities. A perfectly pure salt could be prepared only at an exorbitant price. The process of converting the bromine into bromide of potassium again is liable to introduce some impurities, derived from the caustic potassa or other potash-salt employed; and here again an absolute freedom from foreign and otherwise harmless contaminations cannot be expected, though some manufacturers now turn out a purified salt, which has been freed as much as possible from these impurities. It may be stated, in general, that *commercial medicinal* bromide of potassium

1. *Should contain not less than* 98% of pure bromide;
2. *Should contain not more than* 2% of chloride, sulphate or carbonate;
3. *Should not contain any* bromate and iodide.

The following tests will indicate the limit of presence or the absence of the above impurities:

a. On precipitating bromide of potassium with nitrate of silver in excess, washing the precipitate thoroughly, then shaking it for some time with a cold saturated solution of carbonate of ammonium, decanting and filtering, the filtrate, after being supersaturated with nitric acid, should not present more than a slight opalescence, insufficient to produce a precipitate. No other impurity but chloride having been found present—or all others having been removed—1 part of the perfectly dried salt requires for complete precipitation *not more* than 1.445 parts of nitrate of silver (presence of not more than 2% chloride). This is based upon the following series of figures (see *Biltz, Kritische u. Prak. Notizen zur Pharm. Germ.*):

There are required to completely precipitate

parts of					parts of nitrate of silver.
100 bromide pot.	pure				142.85
99 "	"	+ 1	chloride pot.		143.71
98 "	"	+ 2	"	"	144.56
97 "	"	+ 3	"	"	145.41
96 "	"	+ 4	"	"	146.27
95 "	"	+ 5	"	"	147.12

b. On adding to 1 gram of the salt, dissolved in 20 grams of water, 6 drops of a 10% solution of chloride of barium, no *immediate* cloudiness or precipitate should make its appearance (absence of more than traces of sulphate).

c. On adding to a concentrated aqueous solution of the salt, some solution of chloride of calcium, not more than a slight turbidity should be produced (abs. of more than traces of carbonate).

e. If a little dilute sulphuric acid be dropped upon a sample of the powdered salt (obtained from a number of crystals), pressed upon a white plate, the salt should not assume a yellow color (abs. of bromate).

f. On adding to a 10% solution of the salt, some solution of starch, and then carefully pouring a few drops of chlorine water on top, no blue ring or zone should make its appearance at the line of contact of the two liquids (abs. of iodide).

No. 892.—**Artificial Carlsbad Salt** (P. B.).

The formula given on page 119 of our April number is taken from the Report on the Revision of the German Pharmacopœia by the German Apothecaries' Society

or, Pharmaceutical Association of Germany (*Bericht der Pharmakopoe-Kommission des Deutsches Apotheker-Vereins*, zusammengestellt von Dr. Chr. Brunnengräber, Rostock, Oct., 1879). The proportions there given deviate very considerably from those which may be presumed to exist in the natural water. According to a careful analysis of Carlsbad Sprudel water, made by Mauthner and Ludwig in 1879, it contains in 1,000 parts

Sodium sulphate	2.4053 parts
Sodium carbonate	1.2980 "
Sodium chloride	1.0418 "
Calcium carbonate	0.3214 "
Magnesium carbonate	0.1665 "
Ferric oxide	0.0207 "

It has been found that on evaporating the water to obtain the solid constituents, it depends greatly upon various circumstances—temperature, degree of evaporation, etc.—how the residue is composed. Hence there are hardly any two analyses of the commercial *salt* which agree among themselves. Still, it has for some time been found necessary for the city authorities of Carlsbad to select some one of the numerous formulæ as the standard, in order to be able to settle disputes, and, after careful consideration of the subject, the analytical figures obtained by Fr. Ragsky, in 1862, were adopted, which are as follows:

Sodium sulphate	37.695 parts
Sodium carbonate	5.997 "
Sodium chloride	0.397 "
Potassium sulphate	traces
Water of crystallization	55.520 "
	99.609

In practice, it has been customary to neglect all ingredients besides the sulphate, carbonate and chloride of sodium. Among the many formulæ proposed we content ourselves with quoting the following:

a) *Formula of Waldenburg* (*Hager's Pharm. Prax.*, II., 535):

Sodium sulphate	10.00 parts
" carbonate	6.00 "
" chloride	4.00 "
Potassium sulphate	0.75 "

b) *Formula of Paul Balluff* (of N. Y., proposed in 1858. See *Manual of Germ. Apothecaries' Soc. of New York*):

Sodium sulphate	20.0 parts
" carbonate	3.0 "
" chloride	1.0 "

Mr. Balluff has lately informed us that, according to his observation, the imported Carlsbad salt has, for the last 15 years, been nothing else than simply sodium sulphate.

No. 893.—**Papaya** (Decatur).

We have noticed both the tree *Carica Papaya*, as well as its product, papayotin or papayin or papaïne, or papaya-pepsin, in former issues of our journal. See NEW REM., 1876, 20; 1880, 256; 337, particularly the last-named page. A recent report of Dr. Albrecht, of Neuenburg (*Corresp.-Bl. f. Schweiz. Aerzte*, Nov., 1880; *Zeitsch. d. Oesterr. Apoth. Ver.*, 1881, 119), speaks very favorably of the effects of papaïne (as papaïne-syrup) in cases of simple dyspeptic and catarrhal gastric and intestinal disturbances of small children, in absence of deeper anatomical lesions. Both vomiting and "undigested stools" are said to rapidly disappear in such cases, after a few teaspoonfuls have been administered. Dyspeptic adults are also said to derive great benefit from the use of this remedy.

No. 894.—**Paraffin in Camphor Ice.**

One of our correspondents requests us to put the following query, with a view to elicit the required information:

Can *paraffin* be substituted for white wax and make a *smooth, even* "camphor ice" with *glycerin*? If so, in what proportion? I found that the paraffin congeals too rapidly and produces a mottled appearance in the cakes.

No. 895.—**Aqua Sedativa** (H. O.)

This is the *Eau sédative de Raspail* or *Lotio ammoniacalis camphorata* of the French Pharmacopœia. Formula:

Sodium chloride	6.0 gms. =	grs. 90
Dissolve in		
Distilled water	94.0 "	fl. ʒ 3
Then add		
Water of ammonia (spec. gr. 0.960)	12.0 "	fl. ʒ 3¼
Spir. of camphor	1.0 "	♏ 15

To be shaken when wanted for use. This is a favorite remedy in migraine, headache, cephalic congestion and rheuma. Raspail originally employed three different strengths, varying in the amount of ammonia, namely:

	a.	*b.*	*c.*
Strong water of ammonia (0.920)	60.0	80.0	100.0
Spir. of camphor	10.0	10.0	10.0
Chloride of sodium	60.0	60.0	60.0
Water	1,000.0	1,000.0	1,000.0

c was directed to be used by persons with hard, tough skin, or for use on animals. *b* was intended to be applied to sores caused by the sting or bite of venomous insects, etc., and *a* was designed for ordinary use.

No. 896.—"**Spiritus Æther. Sulph. Ar.**" (Xanthoxylum).

The answer we gave to your query on page 125 of our April number has induced one of our friends to draw our attention to the London Pharmacopœia of 1824, where the following preparation is given:

Spiritus ætheris aromaticus.

Aromatic Spirit of Ether.

Take of Cinnamon	ʒ 3
Cardamom seeds	ʒ 1½
Long pepper	ʒ 1
Ginger	ʒ 1
Spirit of "sulphuric" ether	fl. ʒ 16
(= Ether 1 vol., alcohol 2 vol.)	

Macerate for 14 days in a stoppered bottle and strain. (See also *Gray-Redwood's Supplement*, ed. 1857, p. 936.) It is not unlikely that this preparation was meant by the subscriber.

No. 897.—**Bully-Tree Resin or Gum** (H. J. M.)

The resinous exudation of *Mimusops Balata* Gaertn. is known in trade as *balata*, and is probably closely related to so-called *chicle-gum*.* The former is a product shipped from British Guiana, while the latter is said to be derived from a Mexican tree. Balata is also known as "Chewing Gum" (see NEW REM., 1879, 81), and one of the largest manufacturers of fancy chewing gum in New York, who (as we are informed) extensively uses this substance, which is said to be entirely free from objectionable or injurious ingredients, is Horatio M. Adams, 77 Murray Street, New York, from whom you will probably be able to obtain the article in question, as well as further information.

No. 898.—**Elixir Ferri, Quiniæ et Strychniæ Phosphatum** (F. K. C.).

Our correspondent writes:

I have had occasion to use the following formula published in the April number of NEW. REM. for 1880:

Take of Quinia 64 grs., Strychnia 2 grs., Pyrophosphate of iron 128 grs., Stronger alcohol 2 fl. ʒ, water 3 fl. ʒ, Syrup 3 fl. ʒ, Elixir of orange 8 fl. ʒ. Dissolve the strychnia and the quinia in the alcohol; dissolve the pyrophosphate of iron in the water. Mix the two solutions and add the syrup and elixir. Filter, if necessary.—The result was a muddy turbid mixture owing to the imperfect solution of the quinia.

We have reason to know that our correspondent misunderstood the term "quinia," and used the sulphate in-

* On this compare *Journ. Amer. Chem. Soc.*, I., 50.

stead of the alkaloid. The sulphate requires about 100 parts of alcohol for solution, the hydrated alkaloid only 3 parts. This, therefore, easily accounts for the difficulty which our correspondent encountered. If the sulphate of quinia be dissolved with the aid of dilute sulphuric acid, the solution precipitated with ammonia until it just faintly smells of the latter, and the precipitate washed with cold water, it will be found that it will readily dissolve in the alcohol. Perhaps it would be an improvement to mix the alcoholic solution of the alkaloids first with the elixir and syrup, and then to add the solution of pyrophosphate of iron, so as not to run the risk of precipitating any of the latter by contact with alcohol, though it would again be slowly dissolved upon the further addition of aqueous liquids.

No. 899.—**Lavender Toilet Water** (A. P.).

From a number of formulæ on our files we select the following:

		parts.
a.	Oil of bergamot	30
	" " lemon	15
	" " geranium	5
	" " lavender (Mitcham)	140
	Essence of musk (1.5 parts in 100 parts)	0.5
	Balsam of Peru	60
	Storax	125
	Civet	1
	Alcohol	10,000

Dissolve the ethereal oils in the alcohol, digest the other substances with this solution for at least 4 weeks, then pour off clear, add enough water to just reach the point at which the liquid begins to be very faintly opalescent, and filter.

		parts.
b.	Essence of musk (1.5 parts in 100)	0.1
	" " vanilla (5 p. in 100)	0.1
	" " civet (4 of civet, 4 of orris root in 500)	0.1
	Oil of bergamot	35
	" " lemon	20
	" " lavender (Mitcham)	100
	Triple rose water	1,000
	Alcohol	10,000

N. B. The addition of a *minute* quantity of Oil of Canada Snake root and a very small quantity of acetic ether is also recommended.

No. 900.—**"Violet Water"** (Oliv.).

Possibly the following formulæ, which are well recommended, might answer:

a.	French violet pomade	3 parts
	Essence of cassie (Pomade de Cassie 3, alcohol 5 parts)	0.2 "
	Alcohol	10 "

This may be made more concentrated if desired. It should have some distilled water added to it until the mixture just begins to be faintly opalescent, when it may be again cleared by the addition of a small quantity of alcohol, or else by filtration.

		parts.
b.	Essence of orris (orris 3 p., alcohol 5 p.)	1,000
	" " rose (rose-pomade 4 p., alcohol, 5 p.)	1,000
	" " tuberose (tuberose-pomade 4, alcohol 5 p., storax ⅓ p)	1,000
	" " cassie	2,000
	Oil of bitter almonds	15

No. 901.—**Rubber Cement** (J. A. P.).

A rubber cement for mending rubber boots may be made by dissolving India rubber in disulphide of carbon, chloroform, or benzin. But a simple application of a layer of cement is usually insufficient to permanently mend the torn part, unless the torn surface is perfectly smooth and the parts are overlapping. In most cases it will be necessary to apply a strip of fabric over the rent, upon which the cement is to be applied on both sides. The method is given on page 158 of our last number.

FORMULAS.

Troches of Borax.—Mr. Poinsot, a dentist of Paris, uses troches of borax in the treatment of certain affections of the mouth, such as aphthæ, inflammation of the gums, scurvy, etc.

The preparation of this troche offers difficulties if the usual methods are followed. With tragacanth a very elastic mass is obtained which cannot be divided, and with gum arabic the mass becomes too hard. The following method, however, will be found to succeed:

			(approx.)
Borax	100 gm.	=	3 ʒ
Powdered sugar	900 "	=	28 ʒ
Tragacanth, whole	2.50 "	=	36 grs.
Tincture of benzoin	10 "	=	2½ fl. ʒ
Carmine (No. 40)	0.15 "	=	2½ grs.
Distilled water	60 "	=	2 fl. ʒ

Make a mucilage with the tragacanth, one-half of the water, and one-half of the tincture of benzoin. Incorporate the carmine with the sugar, and mix the borax with one-half of the sugar by means of a sieve. Pour out the mucilage, add to it gradually the other half of the sugar, the remainder of the water, and of the tincture of benzoin; finally, incorporate the mixture of sugar and borax and divide into troches weighing 1 gm. (15 grains). Each troche contains about 0.10 gm. (1½ grains of borax.)—*Rép. de Pharm.*, 1881, 59.

The following recipes are furnished by a correspondent of the *Chemist and Druggist*.

1. *Ginger Beer.*

Brown sugar	2 lbs.
Boiling water	2 galls.
Cream of tartar	1 oz.
Ginger, bruised	2 oz.

Infuse the ginger in the boiling water, add the sugar and cream of tartar; when lukewarm, strain, then add one-half pint of good yeast. Let it stand all night; then bottle. If desired, a lemon may be added, and it may be clarified by the white of one egg.

2. *Lemon Beer.*

Sugar	1 pound.
Boiling water	1 gall.
Lemon, sliced	1
Ginger, bruised	1 oz.
Yeast	1 teacupful.

Let it stand 12 to 20 hours, after which it may be bottled.

3. *Hop Beer.*

Sugar	4 lbs.
Hops	6 oz.
Water	q. s.
Ginger, bruised	4 oz.

Boil the hops for three hours with 5 quarts of water, then strain; add 5 more quarts of water and the ginger, boil a little longer, again strain, add the sugar, and when lukewarm, add one pint of yeast. After 24 hours it will be ready for bottling.

4. *Spruce Beer.*

Hops	2 oz.
Sassafras, in chips	2 oz.
Water	10 galls.

Boil half an hour, strain, and add:

Brown sugar	7 lbs.
Essence of spruce	1 oz.
Essence of ginger	1 oz.
Pimento, ground	½ oz.

Put the whole in a cask and let cool; then add one-half pint of yeast, let stand 24 hours, fine and botttle it.

Freezing Mixture.—The chemical factory of Finzelberg in Andernach manufactures and sells a mixture with

the aid of which a temperature of − 15 to − 30° C. (+5° to − 22° F.) may be obtained. It is composed of:

Calcium chloride	20 parts.
Magnesium chloride	20 "
Sodium chloride	6 "
Potassium chloride	13 "
Water	41 "

On mixing this salt with an equal volume of snow, the temperature of the mixture is depressed to −15 or − 20° C. (+ 5° to −4° F.). With an equal bulk of snow and crushed ice at −5° C. (+23° F.), a cold of − 30° C. (− 22° F.) may be obtained.—*Indust. Bl.*, 1881, 1; *Pharm. Zeit. f. Russl.*

Boracic Acid Ointment.—*A. Krapfenbauer*, of London, sends the following formula to the *Pharm. Zeit.* (No. 29).

Boracic acid, in fine powder	6 parts
Paraffin	9 "
Oil of almonds (sweet)	13 "
Vaseline	8 "

Melt the paraffin, add the oil, and let the mixture become cold. Then incorporate the boracic acid and the vaseline.

This ointment has a nice consistence, and will keep for years without separating.

O. Raveil's Astringent Injection.—

Nutgalls, bruised	10 gm.	=	grs. 150
Bistort root, bruised	5 "	=	" 75
Walnut leaves	15 "	=	" 230
Water	1,000 "	=	fl. ℥ 32

Boil until reduced to 800 gm. (fl. oz. 28).

Used in fluor albus and pruritus vulvæ.

"Ice Pomade."—

Olive oil, finest	2,500 parts.
Spermaceti	500 "
Oil of bergamot	50 "
" neroli	10 "
" cloves	30 "
" sweet orange	50 "

"Rose Pomade."—

French rose pomade	1,200 parts.
White wax	100 "
Spermaceti	200 "
Oil of rose, pure	1 part.
" geranium, best	2 parts.
" bergamot	1 part.
Alkannin	1 "

"Eau de Cologne Soap."—

White soap [Castile]	2,000 parts.
Oil of lemon	8 "
" neroli	4 "
" sweet orange	6 "
" rosemary	1 part.
" thyme	1 "
" petit grain	2 parts.
Essence of civet (30 gm. of civet to 1 liter of alcohol)	4 "

—*D. Seifenfabr.* in *Pharm. Centralh.*, No. 14.

Show Color for Window Bottles.—According to the *Hairdressers' Journal*, an amethystine color is produced by dissolving five grains of salicylic acid in a little solution of ammonia, mixing this with enough water to fill the show bottle; then adding a few drops of solution of chloride of iron, and afterwards a few drops of hydrochloric acid.

How to Make Cisterns and Tanks Water-tight.—Paint thickly on the inside with a mixture composed of 8 parts of melted glue, 4 parts linseed oil, boiled with litharge. In 48 hours after application it will have hardened so that the cistern or tank can be filled with water.

NEW PATENTS.

[*Complete specifications and illustrations may be obtained of any one or more of the following patents by sending the number, title, name of patentee, and date of issue, with twenty-five cents for each copy, to the Commissioner of Patents, at Washington, D. C., together with the name and address of the person requesting the same.*]

March 1st, 1881.

238,274. *Spectacle Frame.*—John L. Borsch, Philadelphia, Pa.

238,277. *Process of Obtaining the Perfumes of Natural Flowers by Absorption.*—Robert A. Chesebrough, New York, N. Y. (patented in France, March 23d, 1877). The improved process of enfleurage consisting essentially in steeping natural flowers in vaseline or refined petroleum until the odoriferous principle of the flowers is transferred to or absorbed by the vaseline.

238,285. *Eye-Glass Supporter.*—Francis A. Hardy, Chicago, Ill.

238,445. *Soap.*—Adrian C. Selby, Maysville, Ky. Composed of sal-soda, unslaked lime, soft water, bar soap, resin, alum, borax, benzine, salt of lemon, and cream of tartar.

238,474. *Treatment of Starch and Starchy Substances and the Production therefrom of a Compound Body Capable of being used as a Substitute for Malt in Brewing and for other Purposes.*—Cornelius O'Sullivan, Burton on Trent, County of Stafford, England, and Marcellus Bailey, Washington, D. C., administrator of William G. Valentin, deceased; said Bailey administrator, assignor to said O'Sullivan; said O'Sullivan assignor of one-half to William Yanger & Co., Edinburgh, North Britain (patented in England, Nov. 12th, 1874).

March 8th, 1881.

238,477. *Syringe.*—Laura M. Adams, New York, N. Y.

238,481. *Truss.*—Stephen M. Bayard, Ionia, Mich.

238,505. *Paint Can.*—Charles E. Hore, Brooklyn, N. Y.

238,507. *Medical Compound.* — Joseph Keller, New York, N. Y. A medical compound composed of saltpeter, camphor, turpentine, Barbadoes tar, oil of lavender, oil of origanum, and oil of spike.

238,543. *Apparatus for Separating Volatile Oils from Fixed Oils.*—Homer T. Yaryan, Richmond, Ind.

238,570. *Baking Powder.*—Charles A. Catlin, Providence, R. I.

238,581. *Bitters.*—Samuel A. Groff, Lancaster, Pa. "To be used for all diseases arising from a disordered stomach or a diseased condition of the blood. Consisting of the liquid obtained by thoroughly extracting the strength from ground cubebs, elecampane-root, buchu-leaves, Peruvian bark, soap-root, slippery-elm bark, serpentaria, quassia, and cinnamon bark by soaking the proportions specified in cologne spirits."

238,587. *Manufacture of Candies, Cakes, etc.*—Isaac W. Heysinger, Philadelphia, Pa. A candy or other confection composed of malt and cane sugar, with or without the addition of other substances.

238,613. *Manufacture of Aluminous Cake.*—Conrad Semper, Philadelphia, Pa., assignor to Harrison Brothers & Co., same place.

238,632. *Eye-Glass Frame.*—Louis Baum, Washington, D. C.

238,641. *Apparatus for Drying Oleaginous and other Substances.*—George B. Boomer, New York, N. Y.

238,680. *White Zinc Pigment and Mode of Manufacturing the Same.*—Thomas Griffiths, Liverpool, County of Lancaster, England (patented in England, Oct. 18th, 1878).

238,721. *Electro-Therapeutical Chair.*—Christopher C. Sharp, Davenport, Iowa.

238,726. *Bottle-Stopper.*—Calvin B. Sponsler, Pittsburg, Pa.

March 15th, 1881.

238,793. *Inhaler.*—Alexander J. Leslie, Cleveland, Ohio.

238,794. *Abdominal Supporter.*—Maurice T. Linquist, New Haven, Ct.

238,806. *Manufacture of Plumbago Crucibles, etc.*—Samuel A. Peto, London, England (patented in England, April 23d, 1880.

238,909. *Fountain for Soda and Mineral Waters.*—Charles Jackson, New Bedford, Mass.

238,938. *Bottle-Stopper.*—Edwin J. Lloyd, Philadelphia, Pa., assignor of half to Isaac C. Pearson, same place; said Lloyd and Pearson assignors of one-third to Henry A. Blake, Wilmington, Del.

238,955. *Truss.*—Frederick N. Norris, Poughkeepsie, and Clayton E. Sweet, Wappinger's Falls, New York.

238,958. *Tool for removing Rubber Discs from Internal Bottle-Stoppers.*—Richard Otten, Chicago, Ill., assignor of half to Charles G. Hutchinson, same place.

238,980. *Manufacture of Metallic Compounds from Sulphur and Sulphides.*—John B. Spence, London, England (patented in England, July 3d, 1877; in France, August 13th, 1879; in Belgium, March 13th, 1880; and in Italy, March 13th, 1880.

238,985. *Nose-Piece for Eye-glasses.*—Fred. Terstigen, Elizabeth, N. J.

March 22d, 1881.

239,015. *Bottle and Stopper.*—Henry Barrett, Hampton, County of Middlesex, England.

239,089. *Manufacture of Sulphate of Alumina.*—Joseph H. Eastwick, Philadelphia, Pa.

239,105. *Bottle-Stopper.*—James D. McDade, Pittsburg, Pa.

239,106. *Therapeutic Bath.*—Josiah McFarland, and William H. C. Martin, Columbus, Ohio.

239,243. *Stopper for Jars or Bottles.*—Robort Gordon, Roselle, N. Y.

March 29th, 1881.

239,331. *Syringe Apparatus.*—Rhodes Lockwood, Charlestown, assignor to Davidson Rubber Co., Boston, Mass. A floating check-valve prevents the entrance of air when the fluid is low in the receptacle.

239,346. *Process of Obtaining Magnesia.*—Carl Scheibler, Berlin, Germany. The process of obtaining magnesia from limestone, dolomite, magnesite, or other lime and magnesia combinations, by first burning the material and then treating it with a saccharine solution to dissolve out the lime, and removing the magnesia from the other insoluble constituents after precipitation by decantation, filtration or otherwise.

239,394. *Process of and Apparatus for Manufacturing Phosphoric Anhydride.*—H. S. Maxim, Brooklyn, assignor, by mesne assignments, to the United States Electric Lighting Co., New York, N. Y. A process of making phosphoric anhydride which consists in bringing together a jet of vapor of phosphorus and a continuous blast of air of sufficient volume to oxidize all of such phosphorus to its highest equivalent.

239,463. *Medical Compound.*—John R. H. Davis and Lemuel L. Davis, Silver Plume, Colo. Consists of sarsaparilla root, wild cherry bark, honey, locust bark, dandelion root, red-haw bark, and whiskey.

239,482.—*Truss.*—Henry E. Garst, Cincinnati, Ohio.

239,504.—*Turpentine-Spout.*—Robert F. Ivey, Williamsburg, Ga.

239,564. *Remedy for Coughs and Colds.*—George H. Smith, Webster, W. Va. Consists of hickory-bark, rock-moss, burnt alum, and apple brandy.

The School of Medicine and Pharmacy of Edinburgh has moved into larger premises in Nicholson Square, and now has a lecture-room capable of accommodating one hundred students.

ITEMS.

To Prevent the Sale of Adulterated Food or Drugs in New Jersey.

CHAPTER CCXVII.

An act to prevent the adulteration of food or drugs.

1. Be it enacted by the Senate and General Assembly of the State of New Jersey, That no person shall, within the State of New Jersey, manufacture, have, offer for sale or sell, any article of food or drugs which is adulterated, within the meaning of this act, and any person violating this provision shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be punished by a fine not exceeding fifty dollars for a first offence, and one hundred dollars for a second and subsequent offences.

2. And be it enacted, That the term "food," as used in this act, shall include every article used for food or drink by man, and that the term "drug," as used in this act, shall include all medicines for internal or external use.

3. And be it enacted, That any article shall be deemed to be adulterated within the meaning of this act;

(*a*)—IN THE CASE OF DRUGS.

First, If when sold under or by a name recognized in the United States pharmacopœia, it differs from the standard of strength, quality or purity laid down therein.

Second, If when sold under or by a name not recognized in the United States pharmacopœia, but which is found in some other pharmacopœia, or other standard work on materia medica, it differs materially from the standard of strength, quality or purity laid down in such work.

Third, If its strength or purity fall below the professed standard under which it is sold.

(*b*)—IN THE CASE OF FOOD OR DRINK.

First, If any substance or substances has or have been mixed with it, so as to reduce or lower, or injuriously affect its quality or strength.

Second, If any inferior or cheaper substance or substances have been substituted wholly or in part for the article.

Third, If any valuable constituent of the article has been wholly or in part abstracted.

Fourth, If it be an imitation of or be sold under the name of another article.

Fifth, If it consist wholly or in part of a diseased or decomposed, or putrid or rotten animal or vegetable substance, whether manufactured or not, or in case of milk, if it be the produce of a diseased animal.

Sixth, If it be colored, or coated, or polished, or powdered, whereby damage is concealed, or it is made to appear better than it really is, or of greater value.

Seventh, If it contain any added poisonous ingredient or any ingredient which may render such article injurious to the health of a person consuming it, provided that the State Board of Health may, with the approval of the governor, from time to time declare certain articles or preparations to be exempt from the provisions of this act; and provided, further, that the provisions of this act shall not apply to mixtures or compounds recognized as ordinary articles of food, provided that the same are not injurious to health, and that the articles are distinctly labelled as a mixture.

4. And be it enacted, That the State Board of Health shall, from time to time, fix the limits of variability permissible in any article of food, or drug or compound, the standard of which is not established by any national pharmacopœia.

5. And be it enacted, That the State Board of Health shall take cognizance of the interest of the public health, as it relates to the sale of food and drugs and the adulteration of the same, and make all necessary investigations and inquiries relating thereto; it shall also have the supervision of the appointment of public analysts and chemists, and upon its recommendation, whenever it shall

deem any such officers incompetent, the appointment of any and every such officer shall be revoked, and be held to be void and of no effect; within thirty days after the passage of this act, the State Board of Health shall meet and adopt such measures as shall seem necessary to facilitate the enforcement of this act, and prepare rules and regulations with regard to the proper methods of collecting and examining articles of food or drugs, and for the appointment of the necessary inspectors and analysts; and the said board shall be authorized to expend, in addition to all sums already appropriated for said board, an amount not exceeding five hundred dollars, for the purpose of carrying out the provisions of this act.

6. And be it enacted, That every person selling, or offering or exposing any article of food or drugs for sale, or delivering any article to purchasers, shall be bound to serve or supply any inspector appointed under this act, who shall apply to him for that purpose, and on his tendering the value of the same for a sample sufficient for the purpose of analysis of any article which is included in this act and which is in possession of the person selling, under a penalty not exceeding fifty dollars for a first offence, and one hundred dollars for a second and subsequent offence.

7. And be it enacted, That any violation of the provisions of this act shall be treated and punished as a misdemeanor, and whoever shall impede, obstruct, hinder or otherwise prevent any analyst, inspector or prosecuting officer, in the performance of his duty, shall be guilty of a misdemeanor, and shall be liable to indictment and punishment therefor.

8. And be it enacted, That any acts or parts of acts inconsistent with the provisons of this act, are hereby repealed.

9. And be it enacted, That this act shall be deemed a public act, and shall take effect at the expiration of thirty days after it shall become a law.

Approved March 25th, 1881.

The International Pharmaceutical Congress.—The executive committee appointed by the Council of the Pharmaceutical Society of Great Britain to make arrangements for the business of the meeting, have adopted the following programme (provisionally): On Saturday evening, July 30th, the president of the Pharmaceutical Society will hold a conversazione at 17 Bloomsbury Square, London, for the reception of visitors.

The business meeting of the congress will be held at the house of the Pharmaceutical Society on Monday, Tuesday, and Wednesday, the 1st, 2d, and 3d of August. The chair will be taken each day at 11 o'clock, and at 10'clock there will be an adjournment of one hour, for luncheon.

The business of the Congress will be conducted, as far as possible, in English, but provision will be made for translating communications in other languages.

The subjects at present suggested for discussion may be referred to one or the other of the following heads:

1. Equalization of the Strength of Official Pharmaceutical Drugs.
2. Pharmaceutical Education.
3. Pharmacopœial Revision.

The first presentation of the Hanbury Gold Medal, to be awarded biennially for "high excellence in the prosecution or promotion of original research in the natural history or chemistry of drugs," and in memory of the late Daniel Hanbury, F.R.S., will be made at this meeting of the Congress.

On Tuesday, August 2d, the British members will entertain their foreign guests at a banquet, and on Thursday, August 4th, an excursion or excursions will be organized to some place or places in the neighborhood of London. Other entertainments will be provided, of which due notice will be given.

A Japanese Pharmacopœia.—A Commission has been appointed by the Japanese Government charged with the task of preparing a *Pharmacopœia Japonica*. The commission is composed of nine natives and five Europeans, and sits at Tokio.

Professor Alfred Stillé is no longer connected with the University of Pennsylvania.

Pharmacopœia Argentina.—The Sociedad Nacional de Farmácia of the Argentine Republic has been commissioned by the National Health Department to prepare a National Pharmacœpia. The society has already taken the preliminary steps, and intends to bring forth as perfect a work as possible.

The Society of Chemical Industry.—The *Chemist and Druggist* reports the formation of a Society of Chemical Industry, the promoters of which are men of distinguished position in the chemical world. It is desired to make the Society the medium for technical discussions among manufacturers, after the model of the Iron and Steel Institute, and it is hoped to embrace local sections in the districts where chemical manufacturers congregate. Prof. Roscoe, F.R.S., has been elected its first president.

The Chemical Society.—At the last annual meeting of this society it was stated that the number of Fellows is now 1,096, which is the largest ever recorded; the income was returned at 2,916*l.*, and the assets were stated to amount to 8,193*l.* The Research Fund, founded in 1876, by a gift of 1,000*l.* from Dr. Longstaff, now amounts to 4,427*l.* Hitherto 37 grants, varying from 5*l.* to 100*l.*, have been made, amounting in all to 1,021*l.*

St. Louis College of Pharmacy.—The annual meeting of this college was held Monday, April 25th, 1881, at the lecture rooms. The various reports of committees were read and approved. These reports showed that this institution is progressing, and that the members are determined to raise the standard of the pharmaceutical profession.

The following officers were elected: *President*, F. W. Sennewald; *Vice-President*, Chas. Gietner; *Recording Secy.*, E. P. Walsh; *Corresponding Secy.*, W. C. Bolm; *Treasurer*, S. Boehm; *Board of Trustees*, Chas Bang, George Ude, H. E. Hoelke, W. B. Addington.

The new State law of Missouri relating to the practice of pharmacy was then taken up, and an animated discussion took place, in which all members participated, showing that they take an interest and are progressive.

W. C. Bolm, *Corresponding Secy.*

PHARMACEUTICAL CALENDAR.—June.

N. B.—The officers of Societies, Colleges of Pharmacy, Pharm. Associations, etc., will oblige us by forwarding schedules of their meetings, lists of officers, and any changes that may be desirable.

Date.	Society Meetings.
Wed. 1st.	Kansas State Pharm. Assoc.—Annual Meet. at Topeka, Kansas.
Thurs. 2d.	N. Y. Coll. Pharm.—Trust. Meet.
	Massach. Coll. Pharm.—Trust. Meet.
	Louisville Coll. Pharm.—Pharm. Meet.
Mon. 6th.	Erie Co. Pharm. Ass. (Buffalo).—Meet.
Tues. 7th.	Chicago Coll. Ph.—Alumni Meet.
	Phila. Coll. Pharm.—Trust. Meet.
Wed. 8th.	Cincinnati Coll. Ph.—Mo'and Ph. Meet.
Thurs. 9th.	Newark Pharm. Assoc.—Meet.
	N. Y. Coll. Ph.—Alumni Exec. Meet.
	Louisville Coll. Ph.—Directors' Meet.
	N. Y. Germ. Apoth. Soc.—Monthly Meet.
	Maryland Coll. Ph.—Meet.
	Phila. Coll. Ph.—Alumni Meet.
Tues. 14th.	Kings Co. Pharm. Soc. (Brooklyn).—Meet.
	Chicago Coll. Pharm.—Trust. Meet.
	Pittsburgh Coll. Ph.—Trust. Meet.
	Pennsylvania Pharm. Assoc.—Ann. Meet. at Williamsport.
	National Coll. Ph.—Trust Meet.
	St. Louis Coll. Pharm.—Pharm. Meet.
Tues. 21st.	Phila. Coll. Pharm.—Pharm. Meet.
	St. Louis Coll. Ph.—Trust. and Alumni M.
Mon. 27th.	Philadelphia Coll. Pharm.—Stated Meet.